

Flight, June 15, 1916.

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 390. (No. 24, Vol. VIII.)

JUNE 15, 1916.

[Weekly, Price 1d.
Post Free, Ltd.]

Flight.

Editorial Office: 44, ST. MARTIN'S LANE, LONDON, W.C.
Telegrams: Truditur, Westrand, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free.

United Kingdom ... 6s. 6d. Abroad ... 11s. 6d.

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TO OUR READERS.

The Supply of "FLIGHT." Important Notice.

Order "FLIGHT" to be either delivered or reserved for you regularly.

As the demand for "FLIGHT" is so great each week, it is of the utmost importance that readers should place their orders *firmly* for copies of "FLIGHT" at the bookstalls, their newsagents, or direct from the publishers, at 44, St. Martin's Lane, W.C., if they wish to secure a copy every week and avoid disappointment. The stringent Government restrictions in regard to the supply of printing paper necessitates this precaution in order that only actual numbers required are printed, and all wastage by unsold copies may thereby be reduced to a minimum, if not eliminated.

THE PUBLISHERS.

EDITORIAL COMMENT.



WHATEVER material proves ultimately to be most extensively employed in the construction of the aeroplane of the future, there is no possible question that at present wood forms the predominant ingredient in the composition of the new arm, and as there does not, at any rate at the moment, appear to be any indication of the coming of a radical change in constructional methods in their application to the aeroplane,

the question is pertinent whether there is any likelihood of shortage in the supply of the kinds of timber most generally employed.

The Future of Aeroplane Timber.

Timber, as is now generally realised, has been, in past centuries, utilised for various purposes in a highly unscientific manner, as the ruthless felling of the forests on the North American Continent bear eloquent testimony. The result has been an enormous increase in the price of timber, and an effort on the part of the U.S.A. Government to put forestry on a sound scientific basis, thus checking and repairing the depletion due to the haphazard methods of the past. We are not, however, directly concerned with problems of forestry in the United States, except in so far as it is always profitable to draw lessons from the doings of others, but what we are concerned with is the supply of the timbers used in aircraft construction, and for which we are not, except to a very small extent, dependent on the U.S.

Which, then, are the kinds of wood most universally employed, and whence do we obtain them? Generally speaking, the timber used for spars and struts is silver spruce, while the rails of an aeroplane body and occasionally the struts of the undercarriage are made of ash. For propellers mahogany and walnut are, perhaps, favoured by most constructors, while for the floats of seaplanes mahogany and cedar are frequently seen. There are, of course, other sorts of wood which are used for specific purposes, but those mentioned may, we think, be said to constitute the most generally employed, and, therefore, in greatest demand.

Now with regard to the sources from which the supply of these timbers have been, and may in the future be, obtained. The silver spruce is found, we believe, all the way down the Pacific coast of the North American Continent. Of the eighteen species in existence seven

grow in North America, and of these the best, both as regards size and quality, is generally considered to be the Sitka spruce (*Picea sitchensis*), which is found in enormous quantities in British Columbia. As far as it is possible to foresee at the present moment, there is no indication that the supply of this particular timber is in any danger of being exhausted, and one may therefore consider the British Empire, if necessary, as being self-supporting as regards silver spruce, so long as Britannia rules the waves—and the air.

The next sort to be considered is ash. This wood is, of course, found almost all over the world, but it varies enormously according to the climatic conditions under which it was grown. Up to the present the ash grown in England has been found far superior to any other kind, but from what we can learn manufacturers are experiencing difficulty in obtaining it in sufficient quantities. No really satisfactory substitute has so far been discovered, although we know of firms who have used hickory in its place with very good results. The latter wood is, we believe, obtainable from New Zealand, although we do not know how it compares for quality with American hickory. Of the kinds of mahogany two are used in float construction, Honduras and Spanish. Seeing how extensively cedar is employed for building canoes and other craft it would appear that this wood might, if necessary, be used as a substitute for mahogany, especially as a very fine quality (*Thuja plicata*) is obtainable in practically unlimited quantities from British Columbia.

The walnut generally preferred for propeller making is, we believe, the French walnut, and unless a substitute can be found it appears possible that shortage might occur. A great deal might be done in the way of economising in the consumption of this wood by using

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Roll of Honour.

THE Secretary of the Admiralty announces the following casualties:—

Drowned (June 9th).

Flight-Lieutenant Cecil W. Dickinson, R.N.

Drowned (May 21st).

Flight-Lieutenant Taunton E. Viney, D.S.O., R.N.

Accidentally Killed (June 10th).

Flight Sub-Lieutenant George K. Williams, R.N.

Wounded (June 1st).

Flight Sub-Lieutenant Ivan de B. Daly, R.N.

The following casualties have been officially announced by the War Office:—

Died of Wounds.

Second Lieutenant P. A. Steenkamp, Dragoon Guards, attached R.F.C.

Wounded.

Second Lieutenant E. H. Colman, Royal Flying Corps.
7766 2nd Class Air-Mechanic A. Hillman, Royal Flying Corps.

Missing.

Second Lieutenant A. R. L. Goodson, London Regt. and R.F.C.

Correction:

Missing.

Second Lieutenant G. Maxwell, Royal Flying Corps, should read: Second Lieutenant G. E. Maxwell, Royal Flying Corps.

Reported in lists received from the German Government:

Prisoner of War.

3022 Corporal T. Donald, Royal Flying Corps.

Previously reported Missing, now reported Prisoners of War.

Lieutenant W. C. Mortimer-Phelan, Royal Flying Corps.
Second Lieutenant W. A. S. Brown, Argyll and Sutherland Highlanders and R.F.C.

some other kind for rifle stocks, as for instance mahogany, which would, we should think, without pretending to have any special knowledge of the subject, do just as well for a rifle stock, while there can be no doubt as to the superiority of walnut for propeller making.

Taking it all round it would appear that, even supposing that aeroplanes will be built to as great an extent of wood in the future as they have been in the past, which does not, by the way, seem at all certain, with careful management we could render ourselves independent in the matter of supply of timbers for aircraft. This is a matter to be decided by experts, and in this connection aviation will have a big word to say, as in the selection of the most suitable woods to take the strains which the framework of an aeroplane demands, no mean judgment is necessary. Already the new art has brought into strong prominence many men whose knowledge has singled them out for high positions in the aeronautical constructional world, and their technical knowledge will, no doubt, help in influencing the systematic planting of forests for the supply of unlimited quantities of the right species of timber for the building up of aircraft for the generations to follow us. Governments are beginning to recognise and appreciate expansion in this direction. The British Columbia executive is already handling this problem of the future, and in this connection a highly interesting pamphlet has been issued by the Forest Branch, Department of Lands, Victoria, British Columbia, which is obtainable from the Agent-General's office for the colony at 1-3, Regent Street. In this booklet is set out the various timbers which form such a rich asset of British Columbia, and which point to the fact that, as we have already said, by careful management the British Empire can be almost self-supporting in the matter of supply of aircraft timbers.

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The Naval Battle.

INFORMATION was received from Copenhagen last week that no German warships had been observed off the coast since the Jutland fight, but Zeppelins had been patrolling the Jutland coast every day.

A First-Class Boy's letter, quoted in the *Middlesex County Times*, says:—

"On Wednesday morning a Zeppelin came over, and we fired and missed, but the light cruisers brought her down."

In a letter written on the day before he lost his life in the sinking of his ship, Engineer-Commander A. E. Cossey, of H.M.S. "Hampshire," says with regard to the Jutland battle:—

"There were Zepps. out, but I only saw one, which came over our Fleet after the action. It was fired at, and made off without dropping any bombs."

A naval gunner, whose letter is quoted in the *Daily Telegraph*, says:—

"The next morning a Zeppelin came to see us. We hit her, and she fell down on the German coast. I fired five shrapnel at her."

With regard to the battle cruiser "Lutzow," which the Germans now admit was sunk, it may be noted that she not only mounted anti-aircraft guns but had a flat upper protective deck amidships to meet aerial attack.

In an official telegram sent out from Berlin on June 8th the following appears:—

"In order to belittle the great German success the British Press also attributes the loss of several British vessels to German mines, submarines, and airships. In this connection it is expressly pointed out that neither mines, which, by the way, would have been just as dangerous to our own fleet as to that of the enemy, nor submarines were employed by our High Sea Fleet, and German airships were exclusively used for reconnaissance work."

The U.S. Navy and Aviation.

IT has been announced by the U.S. naval authorities that a division of cruisers of the Tennessee class will shortly be added to the Atlantic fleet to be fitted with aircraft so as to act as scouts for the battleships. Each of the cruisers will carry at least four aircraft and be fitted with a special catapult device for launching the machines at sea.

The British Air Service

PER ARDUA AD ASTRA

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 6th inst. :—

Temporary Sub-Lieut. (R.N.V.R.) H. W. Capener to "President," additional, for R.N.A.S.; June 5th.

Flight-Commander T. D. Mackie promoted to Acting Squadron-Commander; seniority of June 3rd.

Flight-Lieut. J. J. Petre promoted to Acting Flight-Commander; seniority of June 3rd.

Chief Petty Officer (Mechanic) J. Sutherland promoted to Warrant Officer (2nd Grade); seniority of June 3rd.

Temporary commissions as Lieutenants (R.N.V.R.), seniority as follows: F. H. May, A. P. A. Larking, and W. Wright, all June 5th; the Hon. W. T. Whiteley, June 4th.

The following appeared among the Admiralty announcements of the 7th inst. :—

The undermentioned have been entered as Probationary Flight Sub-Lieutenants (temporary) and appointed to "President," additional, for R.N.A.S., seniority of June 11th: R. Birks, G. M. Part, R. G. Begg, A. C. Corbett, H. Lawson, C. Bounphrey, J. W. Chuter, H. Glaisyer, P. Brend, and R. P. Minifie.

R. B. Freeland entered as Probationary Flight Sub-Lieutenant (temporary), seniority of May 25th, and appointed to "President," for R.N.A.S.

The following appeared among the Admiralty announcements of the 8th inst. :—

Lieut.-Commander A. M. Longmore to the "President." To date June 7th.

The following appeared among the Admiralty announcements of the 9th inst. :—

Temporary Sub-Lieut. (R.N.V.R.) R. K. J. Vallings entered as Probationary Flight Sub-Lieutenant, seniority of June 8th, and appointed to "President," for R.N.A.S.

Petty Officers (Mechanics) (R.N.V.R.) E. D. H. Robinson and W. J. McAlister both promoted to Temporary Sub-Lieutenants (R.N.V.R.), seniority of June 7th, and appointed to "President," for R.N.A.S.

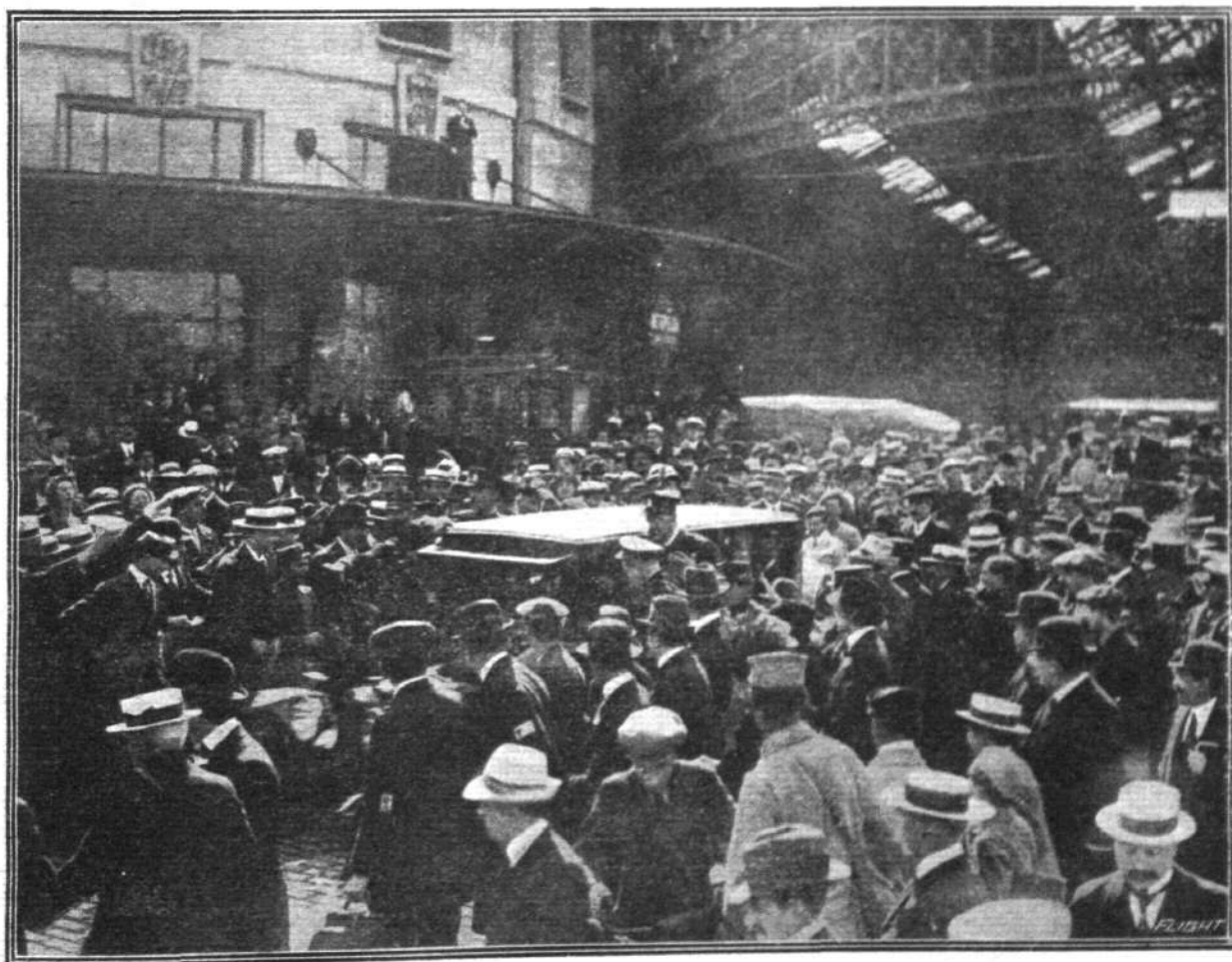
The following have been granted temporary commissions as Sub-Lieutenants (R.N.V.R.), seniority of June 8th, and all appointed to "President," for R.N.A.S.: A. F. Wilson (Probationary Flight Sub-Lieutenant), A. Thubra-Hardern, J. H. Dunn, W. O. Pearce, E. H. Watson, and C. H. Dennison.

The following appeared among the Admiralty announcements of the 10th inst. :—

Probationary Flight Sub-Lieutenant (temporary) J. G. Scott granted a temporary commission as Sub-Lieutenant (R.N.V.R.), seniority of June 8th, and appointed to "President," for R.N.A.S. (appointment as Probationary Flight Sub-Lieutenant terminated).

The undermentioned have been entered as Probationary Flight Sub-Lieutenants (temporary), seniority as follows, and all appointed to "President," for R.N.A.S.: H. Drummond, H. M. Ireland, A. P. Haywood, H. A. Wilson, and W. D. Hurdson, all May 9th; W. C. Ault, May 16th; T. R. Shearer and A. W. Carter, both May 23rd.

H. Shaw granted a temporary commission as Lieut. (R.N.V.R.) seniority of June 8th, and appointed to "President," for R.N.A.S.



How the popular French pilot Gilbert was welcomed at the Gare de Lyon, upon his arrival in Paris, after having escaped for the third time from Switzerland, as recently recorded in "FLIGHT." Gilbert has just managed to get into the car which is seen making its way through the crowd.

Royal Flying Corps (Military Wing).

THE following appeared in a supplement to the *London Gazette* issued on the 5th inst. :—

Memorandum.—To be Temporary Second Lieutenant: Pte. Edgar A. Gulson, from Inns of Court O.T.C., for duty with the R.F.C.

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: R. D. Clinch, C. Jarrott, and J. E. Appleyard.

To be Second Lieutenants (on probation): Norman Rowell, April 19th, 1916; Edouard Gordon Aubin Lefrere, April 24th, 1916; John Henry Robertson, April 25th, 1916.

Second Lieut. (on probation) W. F. Sullivan relinquishes his commission. May 13th, 1916.

The following appeared in the *London Gazette* of the 6th inst. :—

Flight-Commanders, from Flying Officers, and to be Temporary Captains whilst so employed.—Lieut. W. A. Summers, 18th Hrs.; March 18th, 1916. Lieut. G. S. M. Ashby, R.A.; May 15th, 1916.

Assistant Equipment Officers.—Temporary Lieut. W. B. Cushion, 22nd Manch. R., and to be transferred to the General List: April 13th, 1916. Second Lieut. J. E. Appleyard, Special Reserve; May 16th, 1916. Temporary Second Lieut. T. C. Noble, General List; May 25th, 1916.

Memorandum.—Pte. Geoffrey Knight, from 3rd Co. of London Yeo. (T.F.), to be Temporary Second Lieut. for duty with the R.F.C.; May 27th, 1916.

Supplementary to Regular Corps.—To be Second Lieuts. (on probation), Horace H. W. Vowden; May 3rd, 1916. Frederick M. Iredale; May 8th, 1916.

The following appeared in a supplement to the *London Gazette* issued on the 7th inst. :—

Flight-Commanders, from Flying Officers, and to be Temporary Captains whilst so employed.—Lieut. C. H. Dixon, Yorks. L.I., Special Reserve; May 17th, 1916. Lieut. C. W. E. Cole-Hamilton, R. Scots; May 21st, 1916. Second Lieutenant (Temporary Lieutenant) K. T. Dowding, R. W. Surr. R. (T.F.); May 22nd, 1916.

From Flying Officers.—Capt. M. G. Lee, 40th Pathans, Ind. Army; May 24th, 1916. Second Lieutenant C. D. Danby, Tyne Electrical Engineers (T.F.), and to be Temporary Captain whilst so employed; May 27th, 1916.

Flying Officers.—Second Lieut. C. R. Clapperton, Clyde R.G.A. (T.F.); April 26th, 1916. April 29th, 1916: Second Lieut. F. A. Coward, R. W. Surr. R., and to be seconded; Temporary Second Lieut. H. G. Smart, General List; Second Lieut. W. E. Nixon, K.O.Sco.Bord., and to be seconded. Lieut. W. W. Higgin, L'pool R. (T.F.); May 13th, 1916. May 14th, 1916: Second Lieut. A. J. Hamar, Special Reserve; Second Lieut. R. Buck, Special Reserve; Temporary Second Lieut. J. Blackwood, General List. May 16th, 1916: Temporary Second Lieut. A. M. Thom, Gord. Highrs., and to be transferred to the General List; Second Lieut. T. Davidson, Cam'n. Highrs. (T.F.); Second Lieut. R. D. Clinch, Special Reserve; Second Lieut. D. Cloete, Special Reserve; Temporary Second Lieut. L. L. Richardson, General List. May 17th, 1916: Second Lieut. (Temporary Capt.) L. P. Aizlewood, York. and Lanc. R. (T.F.); Temporary Lieut. A. C. Jowett, North'd Fus., and to be transferred to the General List; Lieut. E. G. A. Bowen, R.A., and to be seconded; Temporary Second Lieut. V. W. Harrison, R. Fus., and to be transferred to the General List; Second Lieut. G. N. Anderson, Leic. Yeo. (T.F.); Second Lieut. (on probation) S. C. T. Littlewood, N. Lan. R., Special Reserve, and to be seconded. May 18th, 1916: Temporary Second Lieut. R. C. Bryant, R. W. Surrey R., and to be transferred to the General List; Seco. Lieut. (on probation) V. L. Anderson, Arg. and Suth'd. Highrs., Special Reserve, and to be seconded; G. H. Armstrong; R. M. W. Browne; H. B. Prior.

From Flying Officers (Observers).—Capt. A. A. Walser, Lond. R. (T.F.); April 26th, 1916. May 16th, 1916: Temporary Second Lieut. J. McArthur, General List; Lieut. G. C. de Dombasle, R. Canadian R.; Second Lieut. T. Henderson, Tyne Electrical Engineers (T.F.).

Assistant Equipment Officers.—Second Lieut. A. N. Patterson, Special Reserve; Jan. 20th, 1916. Second Lieut. E. D. L. Davies, Special Reserve; Feb. 14th, 1916. Second Lieut. A. T. Thompson, Special Reserve; Feb. 15th, 1916. Temporary Hon. Lieut. R. Watson, A.S.C., and to be transferred to the General List as Temporary Lieutenant; Feb. 18th, 1916. Second Lieut. C. R. Fry, Special Reserve; Feb. 21st, 1916. Second Lieut. H. L. Saunders, Special Reserve; Feb. 29th, 1916. Temporary Second Lieut. W. J. Cooper, General List; March 30th, 1916.

Supplementary to Regular Corps.—Second Lieutenants (on probation) are confirmed in their rank: M. R. N. Jennings, W. O. Crowe, R. S. Carroll, A. R. Thomas, W. R. Snow, Thomas C. Thrupp to be Second Lieutenant; May 20th, 1916. Claud G. H.

Winter to be Second Lieutenant (on probation); May 27th, 1916.

The following appeared in a supplement to the *London Gazette* issued on the 8th inst. :—

Flying Officers.—Second Lieut. G. H. B. Streatfield, Durh. L.I., Special Reserve, and to be seconded; May 6th, 1916. Temporary Second Lieut. C. E. W. Foster, General List; May 16th, 1916. May 17th, 1916: Temporary Second Lieut. H. Meintjes, General List; Second Lieut. G. L. Faulkner, Special Reserve; Second Lieut. D. G. B. Jardine, High. L.I., and to be seconded; Second Lieut. C. St. G. Campbell, Special Reserve; Second Lieut. L. G. Wood, Devon. R., and to be seconded. May 18th, 1916: Second Lieut. H. G. Monks, Ind. Army Res. of Off.; Second Lieut. W. O. Crowe, Special Reserve; Second Lieut. W. R. Snow, Special Reserve; Second Lieut. B. D. Frost, Essex R., and to be seconded. May 19th, 1916: Capt. R. H. Freeman, Worc. R., Special Reserve, and to be seconded; Temporary Second Lieut. H. T. Horsfield, attached Worc. R., and to be transferred to the General List; Temporary Second Lieut. R. S. Haward, Middlesex R., and to be transferred to the General List; Temporary Second Lieut. G. K. Palmer, E. Surr. R., and to be transferred to the General List; Temporary Second Lieut. W. Sowrey, R. Berks R., and to be transferred to the General List; Temporary Second Lieut. E. J. L. W. Gilchrist, Res. Regts. of Cav., and to be transferred to the General List; Temporary Lieut. K. S. Henderson, General List; Second Lieut. F. L. J. Shirley, York. R., and to be seconded; Second Lieut. M. H. Turner, Dorset R., Special Reserve, and to be seconded. May 20th, 1916: Temporary Second Lieut. F. S. Moller, R. Fus., and to be transferred to the General List; Temporary Second Lieut. E. R. Atkinson, Glouc. R., and to be transferred to the General List; Second Lieut. M. R. N. Jennings, Special Reserve.

From Flying Officers (Observers).—Temporary Second Lieut. K. F. Balmain, General List; May 6th, 1916. Lieut. J. S. B. MacPherson, Canadian Art. May 19th, 1916.

Memoranda.—Major C. M. Griffith, R.A., to be Temporary Lieutenant-Colonel whilst employed as Assistant Director of Aeronautics in India; April 30th, 1916.

Second Lieutenants to be Temporary Lieutenants whilst serving with the R.F.C.; May 1st, 1916: A. Lees, R. W. Kent R.; L. H. T. Sloan, Cam'n. Highrs.; P. F. J. Kent, 3rd D.G.; F. M. I. Watts, Worc. R.; J. M. J. Kenny, A.S.C.; W. L. Mills, R.F.A.; R. R. Money, E. Yorks. R.; G. F. Knight, Devon R., Special Reserve; J. W. Halcrow, Dorset R., Special Reserve; T. F. Lucas, R. War. R., Special Reserve; D. G. Prentice, Worc. R., Special Reserve; (on probation) G. W. Robarts, R.F.A., Special Reserve; C. A. Pelham, 11th Hrs., Special Reserve.

Lce.-Corpl. Kelsey, G. Ffyner Collender, from R.A.M.C. (T.F.), to be Temporary Second Lieutenant for duty with the R.F.C.; April 3rd, 1916. (Substituted for the notification in the *Gazette* of May 22nd, 1916.)

The following appeared in the *London Gazette* of the 9th inst. :—

Memoranda.—Capt. C. D. M. Campbell, R.F.C., Special Reserve, to be Temporary Major (without the pay or allowances of that rank) whilst specially employed; May 18th, 1916. (Substituted for the notification in the *Gazette* of June 3rd, 1916.)

To be Temporary Second Lieutenant: Flight-Sergt. G. F. F. Collender, from R.F.C., for duty with the Military Wing of that Corps; May 19th, 1916.

Supplementary to Regular Corps.—Lieutenant G. de Havilland to be Captain; April 30th, 1916. Second Lieutenants (on probation) confirmed in their rank: L. I. T. Hewer, J. W. James, H. F. Fisher, J. A. Brown, the Hon. M. Greville.

The following appeared in a supplement to the *London Gazette* issued on the 10th inst. :—

Commands and Staff.

Temporary appointment made at the War Office.

Assistant to a Deputy Assistant Director (graded for purposes of pay as a Staff-Captain).—Qmr. and Honorary Lieut. W. J. Ryan, R.F.C., and to be Temporary Captain whilst so employed; May 8th, 1916.

Establishments.

Flight-Commanders.—Lieut. C. G. Davidson, Can. Local Forces, from a Flying Officer, and to be Temporary Captain whilst so employed; May 27th, 1916. Lieut. C. H. Stringer, 5th Lrs., from a Balloon Officer, and to be Temporary Captain whilst so employed; May 29th, 1916. June 1st, 1916: Capt. S. Grant-Dalton, York. R., from a Flying Officer; Second Lieut. E. H. Colman, Special Reserve, from a Flying Officer, and to be Temporary Captain whilst so employed.

Equipment Officer.—Lieut. H. MacD. O'Malley, Special Reserve, and to be Temporary Captain whilst so employed, from March 20th to April 30th, 1916.

Flying Officers.—Temporary Second Lieut. L. E. Brown: General List; March 23rd, 1916. Temporary Second Lieut. F. T. Courtney, General List; March 28th, 1916. May 15th, 1916. Temporary Lieut. G. H. Walker, Army Cyclist Corps, and to be transferred to the General List; Temporary Second Lieut. J. A. Simpson, R. Highrs., and to be transferred to the General List. Capt. H. Colmore, 7th Hus., and to remain seconded; May 23rd, 1916. Capt. H. J. F. Hunter, Rif. Brig., from a Service Battalion, and to be seconded; May 24th, 1916. Lieut. T. E. Lander, High. L.I., Special Reserve, and to be seconded; May 25th, 1916.

Flying Officer (Observer).—May 25th, 1916: Second Lieut. M. G. Begg, Rif. Brig., Special Reserve, and to be seconded; Second Lieut. T. E. G. Scaife, 6th D.G., and to be seconded.

Balloon Officers.—April 15th, 1916: Second Lieut. (on probation), N. M. Hoskins, N. Staffs. R., Special Reserve, and to be seconded; Second Lieut. C. F. Linton, R.E. (T.F.). April 25th, 1916: Capt. L. S. B. Hull, R.W. Surr. R. (T.F.); Second Lieut. J. E. Burt, Midd'x. R., Special Reserve, from a Garr. Bn., Norf. R., and to be seconded; Second Lieut. (on probation), C. W. Hayne, Essex R., Special Reserve, and to be seconded; Temporary Second Lieut. W. S. Huxley, R. Fus., and to be transferred to the General List; Temporary Second Lieut. L. R. Fletcher, General List; Capt. G. Disney, Essex R., from Adjutant, Essex R. (T.F.), and to remain seconded; May 4th, 1916. May 15th, 1916: Second Lieut. W. Brass, Surrey Yeo. (T.F.), from a Flying Officer; Second Lieut. C. St. G. Lyster-Smythe, E. Surr. R., and to be seconded; Temporary Second Lieut. E. N. Hewitt, Lan. Fus., and to be transferred to the General List.

Assistant Equipment Officer.—Second Lieut. F. A. Harper, Special Reserve; May 25th, 1916.

Supplementary to Regular Corps.—Second Lieutenant O. C. Morison relinquishes his commission on reappointment to the R.N.V.R.; May 11th, 1916. Second Lieutenants (on probation) relinquish their commissions: W. E. McCoy, May 24th, 1916; T. Hawkins, June 1st, 1916. Arthur Henry Chapman to be Second Lieutenant; May 25th, 1916. Second Lieutenants (on probation) confirmed in their rank: A. N. Buchanan, D. W. S. Paterson, P. C. Garratt, A. Gordon-Bond, J. L. Horridge, L. C. Angstrom, W. B. Sherwood, P. F. W. Bush, G. R. McCubbin, D. R. Stitt, F. A. Harper. To be Second Lieutenants (on probation): David Drover, May 10th, 1916; Robert H. Whittington, David M. P. Riach, Gilbert R. Nicholson, Harry Rigby and Felix J. Game, May 11th, 1916; Thomas M. Mackay, Francis E. Bray and John J. Botterill, May 12th, 1916; Stanley H. Hawes, May 13th, 1916; Ignatius N. Dracopoli, May 15th, 1916; Hesketh G. H. MacSwiney, May 18th, 1916; Charles H. Collins, May 23rd, 1916; Cuthbert J. Pender, Claud H. Stokes, Stephen Douglas, T. M. Coates, Eugene F. Nash, Edward Jacot, David M. Kerr, Stephen Hay, Hubert C. Short, John E. Arnott, Alfred J. Win-

stanley, William A. M. Niven, Ronald P. C. Freemantle, William J. D. Vince, Geoffrey T. R. Hill, Archibald C. Reeves and William C. Fenwick, June 3rd, 1916.

The following appeared in a supplement to the *London Gazette* issued on the 12th inst.:

Flight-Commanders, from Flying Officers.—Capt. G. de Havilland, Special Reserve, April 30th, 1916. Capt. H. Colmore, 7th Hrs.; May 24th, 1916.

Flying Officers.—May 16th, 1916: Lieut. B. M. Hay, Canadian Engrs.; Lieut. W. P. A. Ascroft, Australian F.C. Lieut. L. T. N. Gould, R.A., from an Observer; May 19th, 1916. May 20th, 1916: Capt. M. G. B. Copeman, Leic. R., and to be seconded; Lieut. I. M. Matheson, Sea. Highrs., Special Reserve, and to be seconded; Second Lieut. W. F. Birch, S. Lan. R. (T.F.); Second Lieut. A. R. L. Goodson, Lond. R. (T.F.), from an Observer; Second Lieut. J. Gibson, Devon R. (T.F.); Temporary Second Lieut. N. F. D. Buckeridge, K.R. Rif. Corps, and to be transferred to the General List; Second Lieut. L. I. T. Hower, Special Reserve; Second Lieut. A. Gordon-Bond, Special Reserve; Second Lieut. J. L. Horridge, Special Reserve; Temporary Second Lieut. L. C. Fawcner, General List; Second Lieut. W. B. Sherwood, Special Reserve; Second Lieut. G. R. McCubbin, Special Reserve; Temporary Second Lieut. K. K. Turner, General List; Second Lieut. J. W. James, Special Reserve; Second Lieut. J. A. Brown, Special Reserve; Second Lieut. H. F. Fisher, Special Reserve; Second Lieut. the Hon. M. Greville, Special Reserve. May 21st, 1916: Temporary Lieut. L. E. Whitehead, K.R. Rif. Corps, and to be transferred to the General List. Lieut. A. W. L. Ellis, Australian F.C. Second Lieut. E. P. Roberts, R. Suss. R., and to remain seconded. Second Lieut. P. F. W. Bush, Special Reserve. Capt. Lord A. R. Innes-Ker, D.S.O., R.H. Gds., and to be seconded; May 24th, 1916. The surname of Second Lieut. J. G. McEwan, Special Reserve, is as now described, and not as in the *Gazettes* of June 4th and Aug. 10th, 1915.

Assistant Equipment Officers.—Second Lieut. T. C. Thrupp, Special Reserve; May 20th, 1916. Second Lieut. A. H. Chapman, Special Reserve; May 25th, 1916. May 29th, 1916: Temporary Second Lieut. K. G. F. Collender, General List; Second Lieut. A. N. Buchanan, Special Reserve; Second Lieut. D. R. Stitt, Special Reserve.

Memoranda.—Temporary Lieut. Sidney Stretton, from R. Mar., to be Temporary Lieutenant on the General List for duty with the R.F.C.; Mar. 16th, 1916.

To be Temporary Second Lieutenants: Gunner Jack K. Mountain, from Australian Fd. Art., for duty with the R.F.C.; May 15th, 1916. Flight-Sergt. George F. Drudge, from R.F.C., for duty with the Military Wing of that Corps; May 28th, 1916.

Supplementary to Regular Corps.—Second Lieutenants (on probation) relinquish their commissions; May 24th, 1916: R. W. Catto, H. G. Smith, G. P. Ham, J. L. Dashwood.

An American Long-Distance Record.

THE new Curtiss twin-engined biplane made a fine performance on May 20th, when piloted by Victor Carlstrom, with Capt. Ralph L. Taylor as passenger, it flew 400 miles along the Atlantic coast from Newport News to Sheepshead Bay, near New York, the time being 4 hours 1 min.

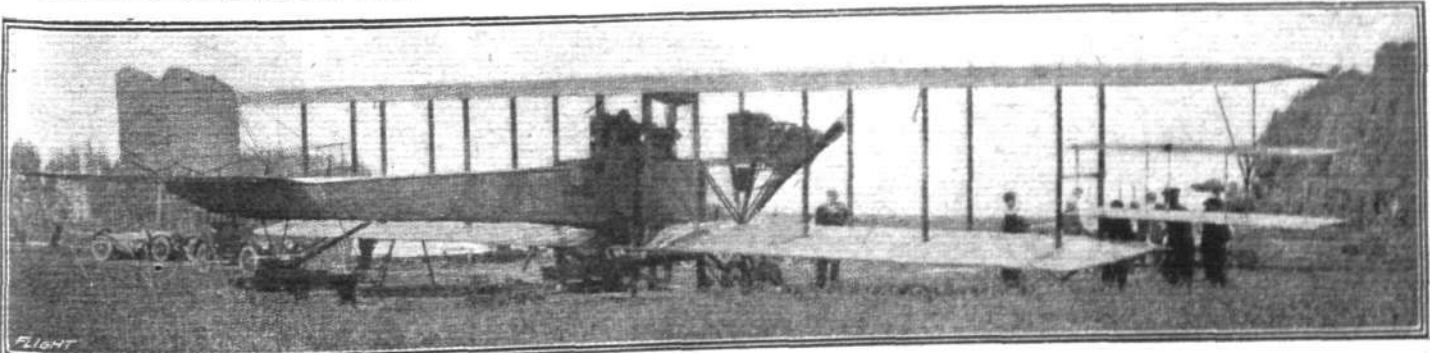
Stephenson McGordon on a large single-motored Curtiss, who started at the same time as Carlstrom, also made the journey, but took 4 hours 50 minutes.

Five days later the twin-engined Curtiss was utilised to take a special edition of the *New York World* from New York to Washing-

ton, where it was distributed among members of the Senate and the House of Representatives. Through the courtesy of the Aero Club of America we have been favoured with one of the copies as a souvenir.

An American Fatality.

WHILE attempting to do an underneath loop at Dallas, Texas, on May 6th, Captain J. Hector Worden was killed. According to *Aerial Age* it is thought that the immense pressure occasioned by the exposure of the body to the air (in the ordinary loop, the body is protected by the machine) caused the aviator to lose consciousness and the control of the machine.



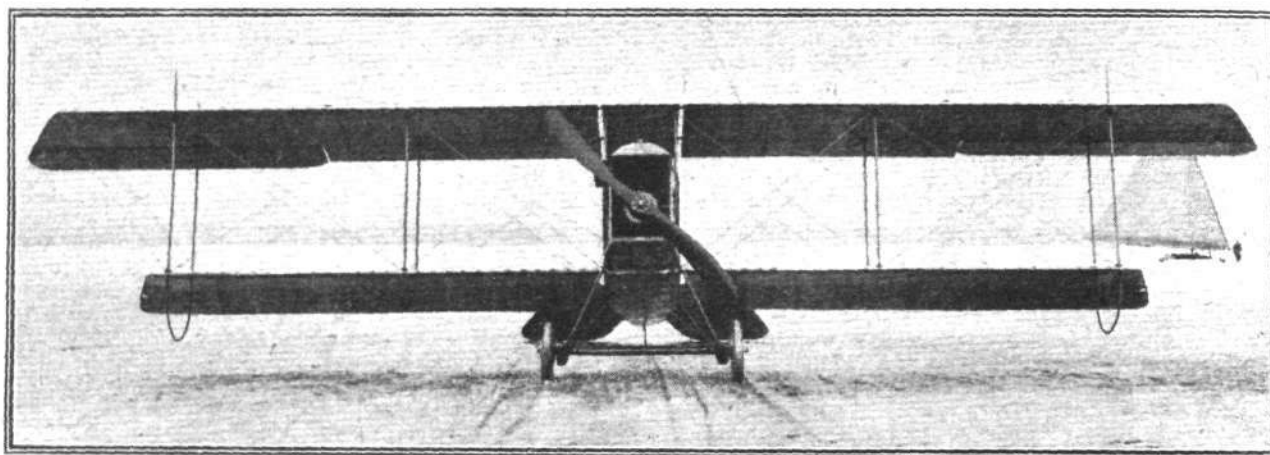
A new twin-engined "battleplane," intended, it is stated, for the U.S. Army, has just been completed at Sunnyvale, California. As the photograph shows, it is of the fuselage tractor type, with the engines mounted on the wings. The machine weighs about two tons, and has a span of 72 ft. and an overall length of 40 ft. It is expected that she will carry nine or ten passengers. A peculiarity of this machine is the biplane type of ailerons, which can be seen in the illustration. (From the "Scientific American.")

THE M.F.P. TRACTOR BIPLANE.

SOME interesting and successful tests were carried out recently by Guy Gilpatric at Toronto, Canada, with a new tractor biplane that has been built in that city by the Polson Iron Works under the direction of Walter H. Phipps, who is responsible for its design. The M.F.P. biplane—the initials representing the names of Col. J. B. Miller, Walter L. Fairchild, and W. H. Phipps, the interested parties—is noteworthy on account of its steel construction. It differs from most other steel-constructed machines in that there is little or no welding, all parts and joints being made on jigs and assembled by bolting

The main planes of a section tested at the Eiffel laboratory are of one-piece construction, very light and strong. They are built up with $\frac{3}{4}$ -inch grooved spruce battens nailed and glued to $\frac{3}{16}$ -inch hollowed, laminated birch and gumwood webs, assembled on two stout 2-inch tubular steel spars.

Each wing is trussed inside with four steel compression struts and strongly cross-braced, a construction which it is claimed adds materially to their rigidity. Top and bottom planes are separated on each side of the body by two pairs of streamline section struts, all of the same

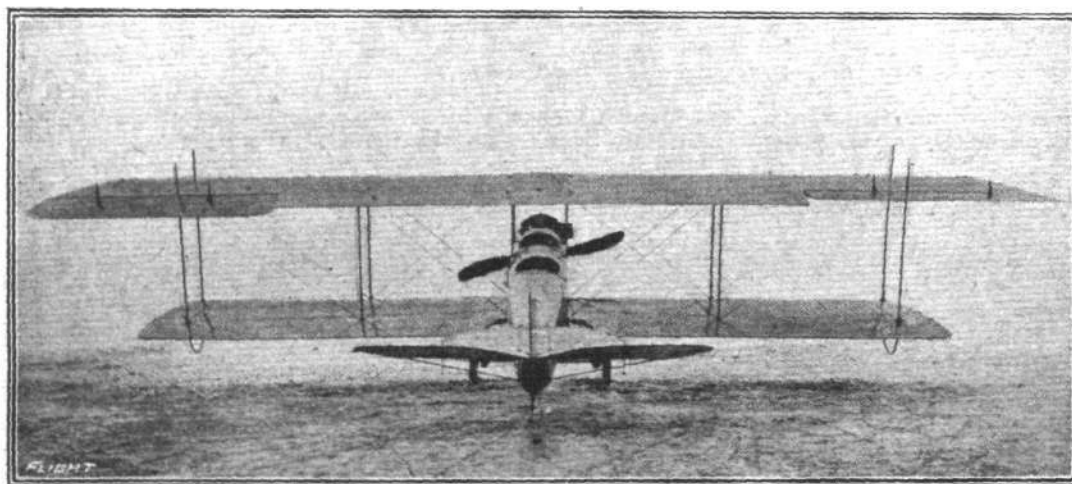


Front view of the M.F.P. model B 2 biplane.

to special fittings. Most of the fittings are made, as far as possible, interchangeable, thus greatly facilitating repairs, and the number of spare parts is considerably reduced as the same fitting is used in many different places.

M.F.P. biplanes are designed in four styles, a fast single-seater scout, a two-seater scout (model D), a standard two-seater (model C), and a large-span two-seater (model B 2). With the exception of the first model, these machines differ only in the main planes,

length and interchangeable on Models B 2 and C. The roots of the main spars fit into special drop-forged sockets, mounted on the *fuselage* for the lower plane and on the centre plane cellule for the top plane. These sockets are interchangeable, and are identical on both front and back spars. They are exceptionally light and strong, and have provision for double load wiring and front and back bracing, and, as in the case of the main spars and sockets, these struts have been subjected to most thorough tests for strength. All turnbuckles and

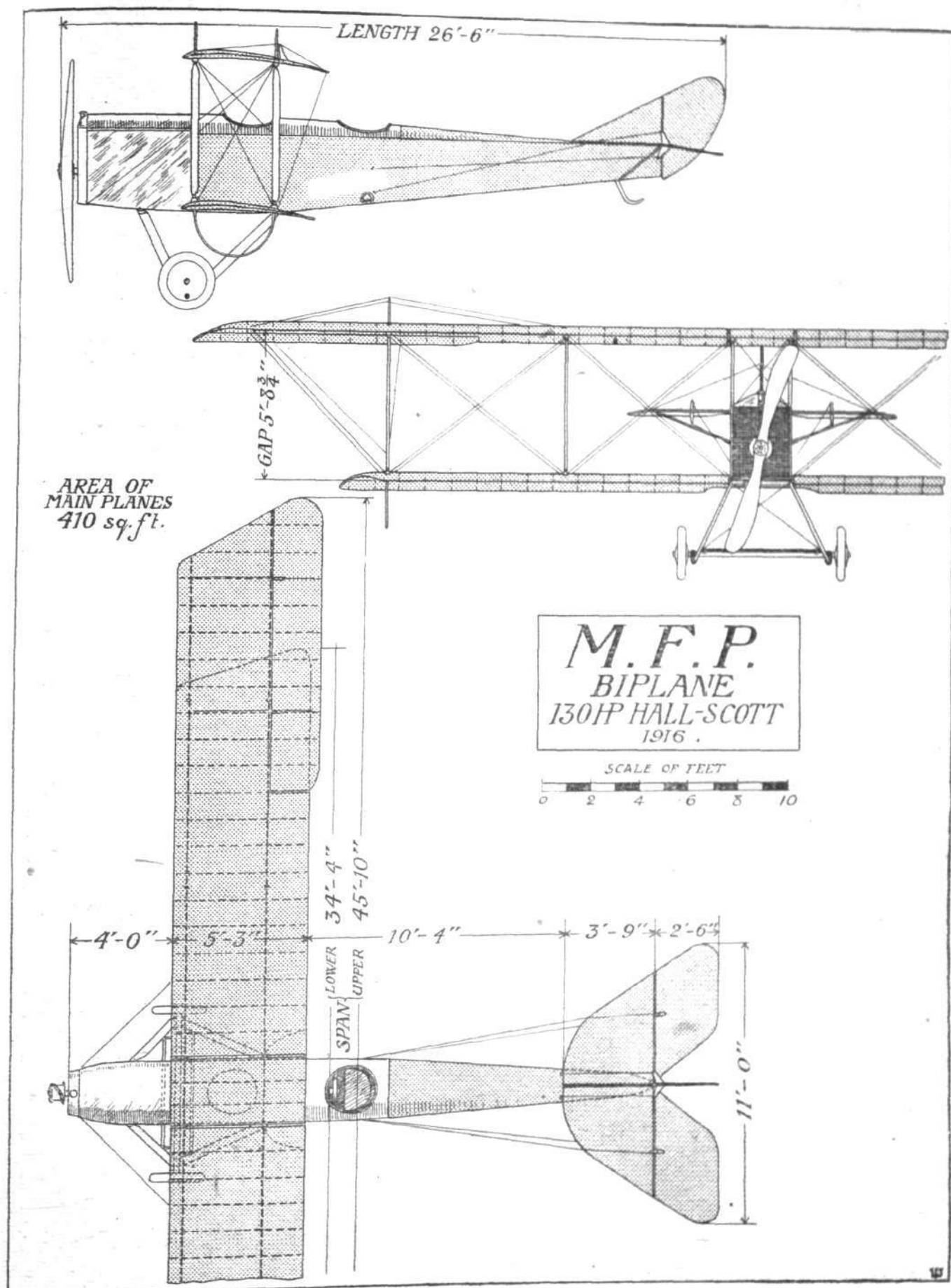


Rear view of the M.F.P. model B 2 biplane.

and they can be easily converted into seaplanes by the mounting of two single-step floats, which are attached to the same fittings that carry the land chassis. A factor of safety of 8 has been adopted in the design of all types. As the main characteristics of models B 2, C, and D are similar, the following description will be confined to the first-named, to which the accompanying scale drawings and photographs refer.

wires have also been tested to insure the high factor of safety. The covering is Greeve's Irish aeroplane linen treated with four coats of dope.

The *fuselage* is rectangular in section, 30 ins. wide by 35 ins. deep in front, tapering to 14 ins. in a vertical knife edge at the rudder. The longitudinals are of steel tubing, very light, and braced with light steel tubes, joined with a special clamp, and then cross-wired.

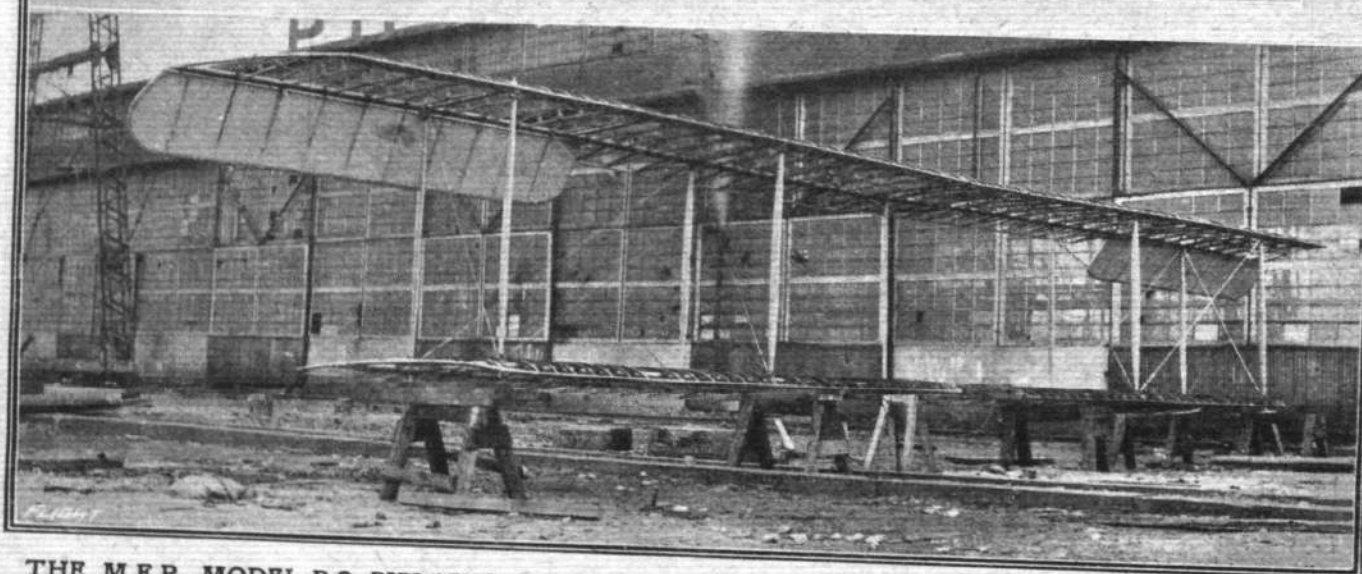
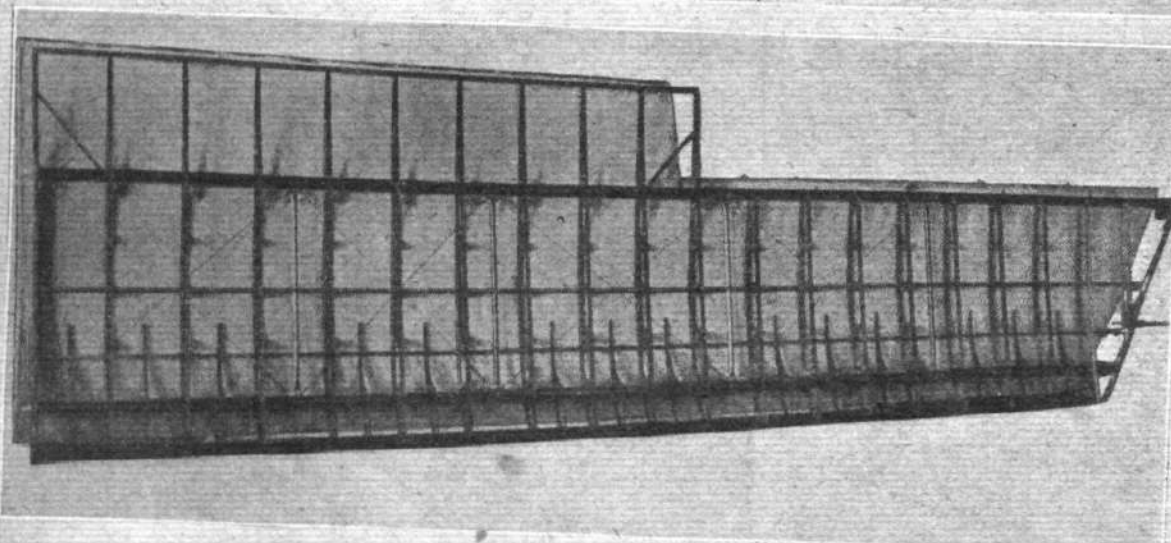
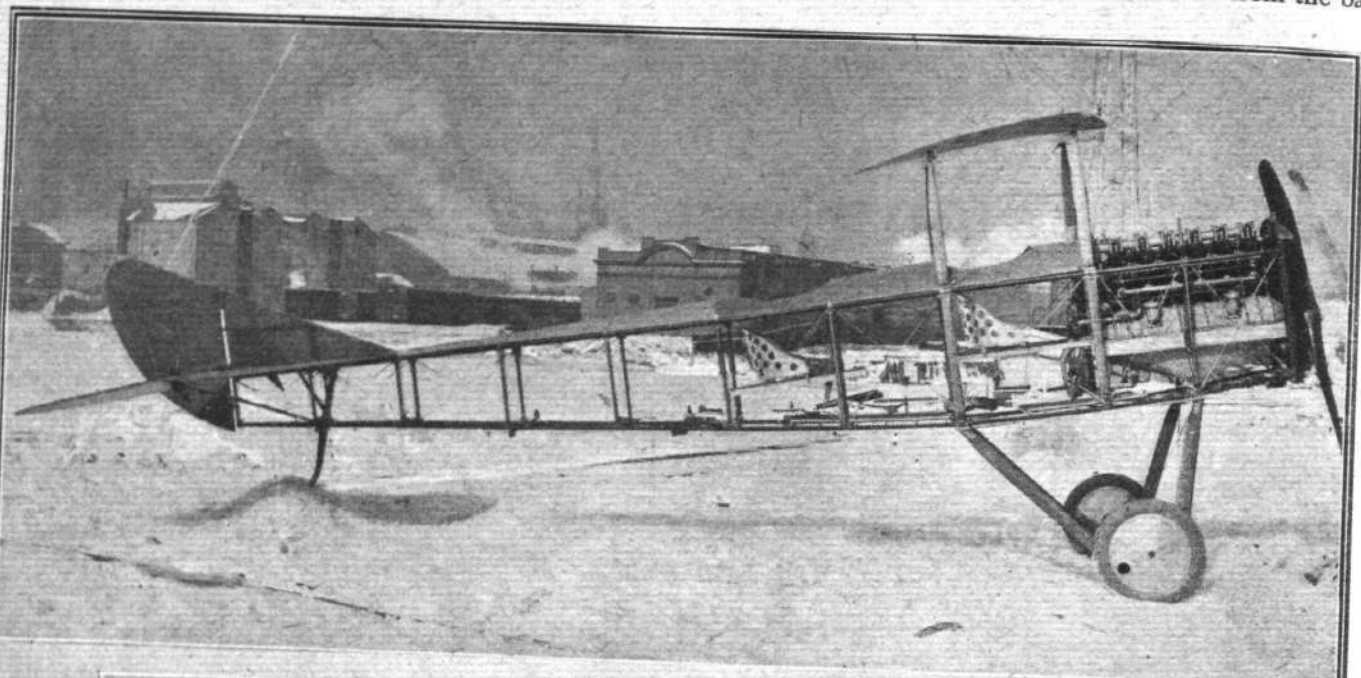


THE M.F.P. MODEL B 2 BIPLANE.—Plan, side and front elevation to scale.

Throughout the construction of the whole machine the *usage* fittings are interchangeable. The third and fourth *fuselage* struts are extra large, and at the top they fit into plates which carry the extension struts to the

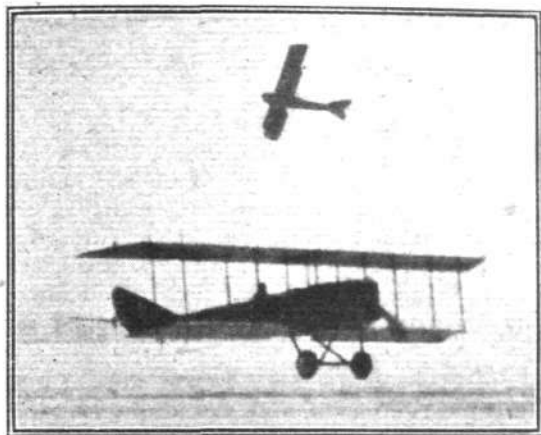
upper plane cellule, while at the bottom they fit into simple clamps which carry the drop forgings forming the lower plane attachments.

The top of the *fuselage* is streamlined off from the back



THE M.F.P. MODEL B 2 BIPLANE.—Three views showing the construction of the *fuselage* and main planes.

of the pilot's seat to the tailplane by a turtle deck, which is readily detachable. Fabric is used for covering the fuselage aft of the engine portion, which is covered with sheet metal. On account of the narrow width of the



Two views of the M.F.P. biplane in flight.

fuselage—30 inches—and the position of the passenger, well forward, with the pilot well in back of the planes, both are afforded a good view both forward and downward.

Either a 130 h.p. Hall-Scott or the new 160 h.p. Bournonville is installed in models B 2 and C, but model D is equipped with a special 300 h.p. Duesenberg motor, fitted with electric starter. The engine is mounted on two stout laminated wood engine bearers, directly in front of the passenger and separated from him by a dash, through which a starting crank protrudes,

enabling the engine to be started from the seat. The petrol is fed to the engine from a large 60-gallon tank, which is sufficient for six hours' flight.

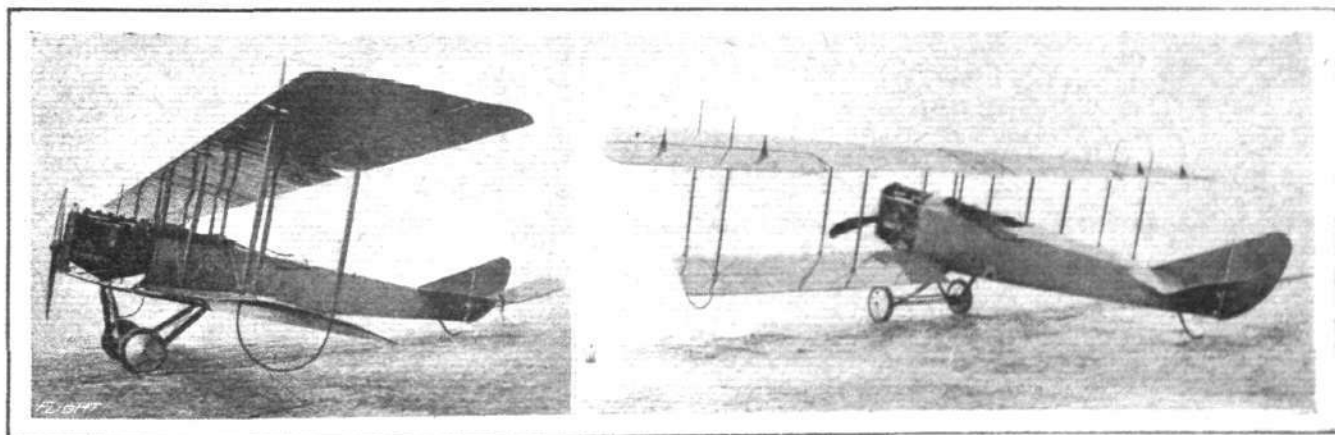
The landing chassis consists simply of two stout U frames of the same streamline section as the interplane struts, and cross-braced with a steel cross member of similar section. Two 26 x 4 in. disc wheels are mounted on a single axle, which is sprung on to the chassis frames by rubber shock absorbers and guided with radius rods. The tail skid is of ash, and is also sprung on with rubber shock absorbers.

With the seaplanes the two single step floats, which are of efficient design, are built up of spruce frames with mahogany planking and divided into five water-tight compartments.

The Dep. wheel and foot bar type of control is fitted, double-wired throughout with $\frac{5}{8}$ in. steel cable.

The following are the complete specifications of all three models:—

	Model B 2.	Model C.	Model D.
No. of seats	2	2 (single or double control)	2 (single or double control)
Span—			
Top	45 ft. 10 ins.	38 ft. 10 ins.	38 ft.
Bottom	34 ft. 4 ins.	38 ft. 10 ins.	38 ft.
Chord	5 ft. 3 ins.	5 ft. 6 ins.	5 ft. 6 ins.
Gap	5 ft. 8½ ins.	5 ft. 8½ ins.	5 ft. 6 ins.
Area	410 sq. ft.	392 sq. ft.	380 sq. ft.
Length	26 ft. 6 ins.	26 ft. 6 ins.	26 ft. 10 ins.
Speed range (loaded)	48 to 90 m.p.h.	49 to 95 m.p.h.	60 to 130 m.p.h.
Weight (empty)	1,370 lbs.	1,420 lbs.	220 lbs.
Useful load	900 lbs.	900 lbs.	1,000 lbs.



Three-quarter views of the M.F.P. model B 2 biplane.

Two Useful Books.

THAT a fourth edition of "Aero Engines" should have been called for within nine months is sufficient testimony to the excellence of Mr. G. A. Burls's work, which is unique in that it is about the only book which deals with the subject in an adequate manner. The latest edition is practically unaltered from the first, but for those who did not see the original review in these columns it may be said that the first three chapters deal with the theory and design of motors with special reference to the requirements of aircraft, and although Mr. Burls goes into the matter thoroughly, he has managed to steer clear of being too mathematical. He then goes on to describe the leading types of horizontal, radial, vee, vertical, and rotary engines. There are over 26 illustrations, including 5 folding plates. The book, which is published by Messrs. Charles Griffin and Co., can be obtained from "FLIGHT" Office for 9s., post free.

Similarly the excellence of Mr. A. Fage's concise scientific study, which is published in the same series, has called for a second edition. Advantage has been taken of the opportunity to add a

section to Chapter II dealing with the distribution of pressure around a cylinder and around a streamline body placed in a uniform current of air. One or two of the other chapters have also been rearranged, which makes for greater clearness. The price remains as before, and it can be supplied from this office for 6s. 6d. post free.

Steering by the Stars.

ONE of the great difficulties of night flying is that the pilot is deprived of the advantage of seeing prominent landmarks, and so cannot check his bearings. There are, however, the stars to guide him on his way, and those who have to undertake night flying duties will find much useful information on this subject in a little brochure published by Mr. J. D. Potter, of 145, Minories, E.C., entitled "Steering by the Stars." It has been compiled by Mr. J. Dundas White, LL.D., M.P., for the help and guidance of those who have to be in the air, on the road or on the water after dark. It gives sketch maps and directions for finding the selected stars, together with tables of star bearings, &c. It costs one shilling.

ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS.

Regulations for Civilian Flying Schools Approved by the Royal Aero Club.

Regulations.

1. Every instructor shall have obtained an F.A.I. Aviator's Certificate and shall have been fifteen hours in the air in control of a machine, after obtaining his certificate.
2. The maximum number of pupils for each machine in flying condition shall be six.
3. The maximum number of pupils for each instructor shall be eight.
4. The minimum proportion of reserve machines to replace those undergoing repair shall be one for every three in use.
5. The minimum time a pupil shall be in the air in the aggregate before making the necessary flights for an Aviator's Certificate shall be five hours, of which at least two hours shall be solo.
6. All Schools shall keep a register of pupils under instruction, and a book giving full particulars of all flights made by them, which shall be open to inspection at any time without notice by officials of the Royal Aero Club appointed for that purpose.
7. The Flying Ground shall be kept clear while a pupil is carrying out the tests for an Aviator's Certificate, and each school shall undertake not to allow any of its pupils to fly while a pupil of another school is carrying out the tests for a Certificate.
8. Particulars of all breakages and repairs to machines shall be kept in a book provided for that purpose, which shall be open to inspection by the officials of the Royal Aero Club.
9. The "Rules of the Air," as set out in the Competition Rules of the Royal Aero Club, shall be observed by all pupils.
10. Machines used for instructional purposes shall be inspected frequently by an instructor during the day's work, and always after a bad landing, and by a competent mechanic each day.

11. All machines shall be inspected at any time without notice by an independent inspector appointed by the Royal Aero Club.
12. Disputes between pupils and schools shall be submitted to arbitration by the Royal Aero Club.

THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

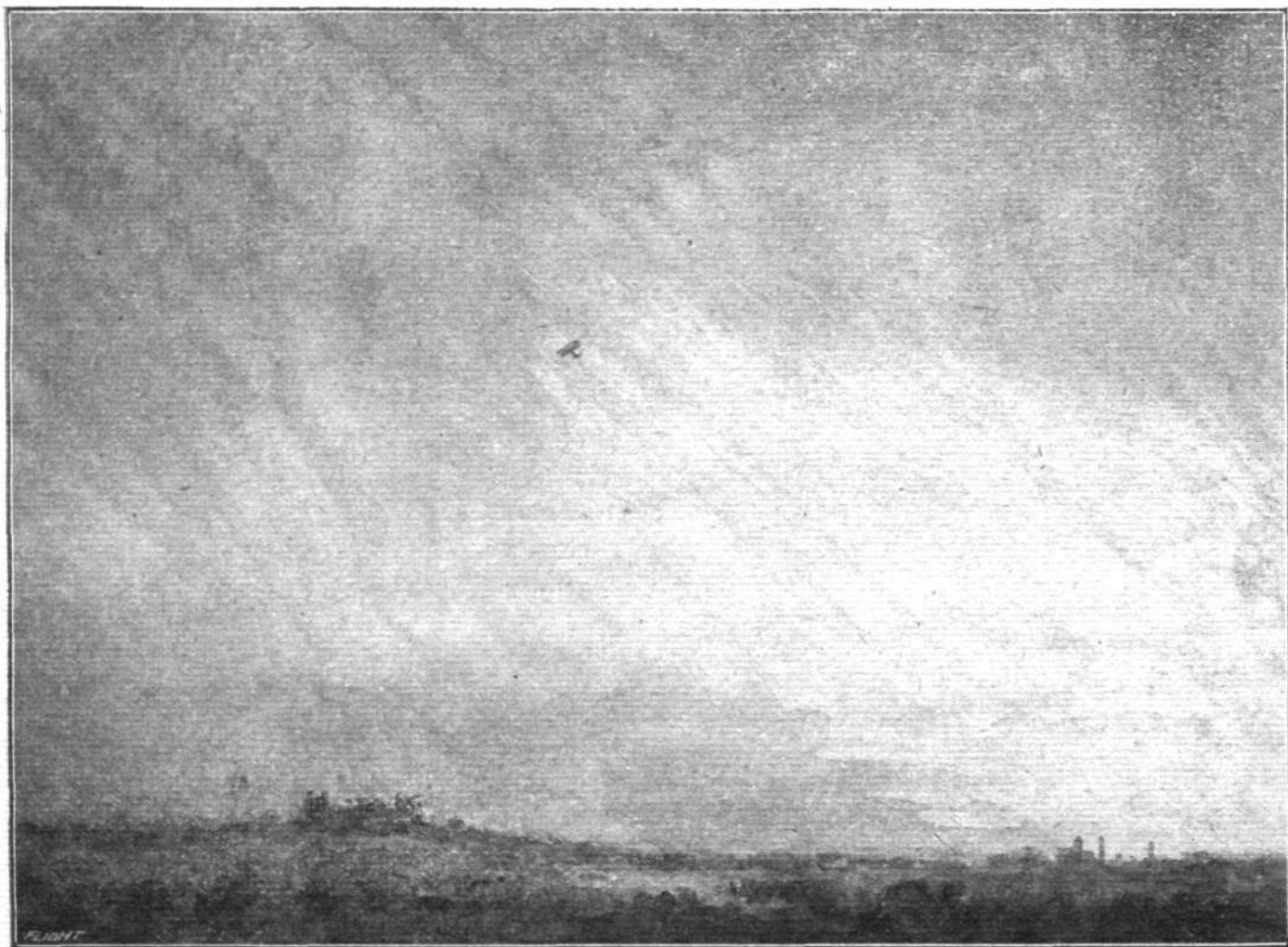
THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers, and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.		£	s.	d.
Total subscriptions received to June 6th, 1916	Collected at the Westland Aircraft Works,	10,695	11	2
Yeovil (Thirty-fifth contribution)	...	0	18	0
Employés of Ruston, Proctor, and Co., Ltd. (Eighth contribution)	...	1	10	0
Subscribed by Officers of the Royal Naval Aeroplane Station, Dover	...	6	6	0

Total, June 13th, 1916 ... 10,704 5 2
166, Piccadilly, W. B. STEVENSON, Assistant Secretary.



CAUGHT IN THE STORM—A TEST OF THE PILOT'S NERVES.—An incident witnessed by the artist on Sunday evening last during the heavy storm. The plane was passing over the Alexandra Palace, apparently working its way to Hendon.



London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Straights with instructor last week: Messrs. Jaimie, Reynier, Donald, Goodhart, Rodocanachi, Welinkar, Ballard, Hodgkinson, Key, Forster, Fisher, Callard and Ward. Circuits with instructor: Messrs. Cooper, Rabourdin and Turner. Eights: Messrs. De Beer, Smith and Parkinson.

Instructors: Messrs. Biard, Hale, Pashley, Manton, Russell and Winter.

Brevet during week: Mr. Slodon.

Beatty School.—The following pupils were out during last week: Messrs. Gliksten, Drewery, Venables, Murdoch, Roberts, Knox, Phillips, Stanley, Dowding, Davy, Gaskin, Hoskins, Earl, Skeet, Kay, Edwards, Jones, Whitmore, Hick, Garlick, McPherson, Mitchell, Towson, Elliott, Austen and Goodman.

The instructors were Messrs. G. W. Beatty, G. Virgilio, A. E. Mitchell and H. Fawcett; the machines in use being Beatty-Wright dual-control and single-seater propeller biplanes and Caudron dual-control and single-seater tractor biplanes.

Certificates were taken during the week by Messrs. G. F. Barrow, C. F. Brewerton and B. Gaskin on Caudron biplanes.

Ruffy-Baumann School.—Pupils with instructor last week: Edgar, Di Balmi, Williams, Fraser, Carr, Wilson, Fanshawe, Beebee, Trubridge and Babington Smith. Doing straights or circuits alone: Fanshawe, Williams, Wilson, Fraser, Winter, Whitaker, Torres and Maya. Figure eights: Winter, Edgar, Torres and Maya.

Instructors: Edouard Baumann, F. Ruffy, A. Baumann,

Thomsen and Winchester. Machines in use: 60 and 50 Ruffy-Baumann biplanes.

Certificates were taken by J. Whitaker, A. Maya, O. Torres, H. Winter and J. Edgar.

A new 60 h.p. Ruffy-Baumann biplane has been put into commission this week, and a further new 50 h.p. machine is practically ready.

London and Provincial Aviation Co.—Pupils doing rolling last week: Messrs. Egerton, Blacque and Mander. Doing straights: Messrs. Sivewright, Evernden, Daly, Birkbeck and Jones. Circuits and eights: Messrs. Rimer and Dawson, Captain A. A. Nathan.

Instructors: Messrs. W. T. Warren, M. G. Smiles, F. G. Parsons and W. T. Warren, jun.

Royal Aero Club Certificates were taken by Captain A. A. Nathan and Mr. A. L. Rimer.

Bournemouth School.

PUPILS rolling alone last week: Messrs. Pritt, Scaramanga, Daniel, Green, Little, Brandon, Turner, Hammersley, Hinchliff, J. B. Smith, Montgomery and Wingfield. Doing straights alone: Messrs. O. Wilson, H. Smith and Barlow. Half circuits alone: Messrs. Morris and J. Wilson. Figures of eights and circuits alone by Mr. Morris, who is now flying exceedingly well.

Instructors: Messrs. S. Summerfield and Brynildsen; 35 h.p., 45 h.p., and 60 h.p. Caudrons in use.

Although the weather was far from ideal, the usual exhibition flights were again carried out during the week by Mr. S. Summerfield, and several passengers were carried. Mr. Stevenson, of the R.A.C., paid a visit to the aerodrome and witnessed several service machines land.



A group of some of Instructor C. M. Hill's pupils at the Hall Flying School, Hendon, in front of an all-British-built Caudron, the engine being a 70 h.p. Isaacson, and the propeller an Ebor.

F.N.B. Series.

ARMCHAIR REFLECTIONS

by the "Dreamer"



To an Unknown Pilot.

To speak of the weather is supposed to be a sign of weakness in the conversational art, yet strong indeed would be the oratorical powers of the man who could pass through the kind of weather we have been blessed with for the last two weeks, without making some reference to it.

Whether the heavy cannonading off Jutland on that never-to-be-forgotten Wednesday has anything to do with it, I do not know. Opinion is about equally divided on the question of the ability of gunfire to produce rain. Yet years ago, in the vine countries, rain producing by concussion was tried, and pronounced a complete success.

In whatever manner or degree it has come about, there is not much doubt that for variety, the weather has been abnormal, even for England. Rain and sunshine, heat and cold, storm and calm have succeeded one another at such short intervals that on frequent occasions we have run the whole series many times over in one day.

A few years ago, when pilots used to watch the flags run up on short poles above the hangars, and did not care to venture up unless the said flags were hanging down in a state of idleness, such weather as we have recently experienced would have effectually put an end to any idea of venturing aloft, and those pilots would have sat about in groups, consuming innumerable cigarettes.

To-day it takes something more than a strong breeze to stop flying. Even the risk, as has obtained during this spell of indecision on the part of the gods of the elements who have played fast and loose with us to their heart's content, of going up in a dead calm only to be engulfed in a howling hurricane in less than ten minutes, has made little or no difference to the number of machines in the air, or the amount of practice put in by our pilots and advanced pupils.

It would be extremely difficult to pick upon any one day of the past fortnight as being worse than its fellows, but last Sunday was bad enough in all conscience. Bright sunshine with summer zephyrs, and forty-mile gales accompanied by thunder, lightning and deluges of rain followed each other with such rapidity as to be almost bewildering.

One would hardly have expected flying men to take the air on such a day, yet there were many who did, and it is to one of them I venture to more especially address this appreciation.

I have not the slightest idea who the pilot was. Had the same thing happened a year or two ago, I should have been in no doubt as to his identity, for there were those who would have attempted such flying, only in numbers such as could have been counted on the fingers of one hand and left a few over.

It was somewhere between five and six o'clock on Sunday evening, during one of the most severe storms on a very stormy day, that a B.E., apparently fighting its way from Chingford to Hendon, flying rather low, and possibly driven by the wind far south of its proper course, gave me an exhibition of superb piloting such as I shall probably never see equalled in a lifetime.

The wind was terrific, and the rain almost blinding.

The machine was buffeted about like a piece of paper, and was at times almost hidden in the downpour. With masterly skill the pilot wore his way round on to a straight course, and the last I saw of him he was making well away for his destination, apparently quite master of the situation. It was a splendid example of airmanship, and the unknown pilot has my heartiest appreciation of his pluck and skill. Here's to him.

To Another Unknown.

Not entirely unknown, because I know his name:—2nd-class Air-Mechanic W. J. Woodland. Not entirely to him, because the poor fellow has gone to his last rest, but to his friends and relations, and to those of his class in the Flying Services, an appreciation, and an intimation to them, which was brought vividly home to me on the day of poor Woodland's funeral, which it fell to me to meet accidentally, that Though This Be The Price Of Empire, It Carries Its Own Reward.

Woodland met his death at the Central Flying School when flying as a passenger with Lieut. E. le Sauvage, who, unfortunately, also was killed. It is a part of the duties of these Air-Mechanics to go aloft as a passenger whenever they may be called upon. Unfortunately accidents must happen on occasion, and the life of one or other of these men in their lowly capacity be given to King and Country, although under such circumstances of rank as to escape the notice of the general public, given nevertheless freely, and to such good purpose as any, no matter of what rank.

The saluting of officers by those of lower rank is of such frequent occurrence in our main streets at the present moment, owing to the number of those wearing the King's uniform, as to seem almost painful. I, myself, have thought that perhaps something could be done to excuse this when so many men and officers are in our midst. Truth to tell, the men do not seem to mind, and the officers, all honour to them, will avoid seeing the man if they possibly can, so as to make a salute unnecessary.

I met the funeral procession of Mechanic Woodland in Islington. Just a simple coffin covered by the beloved flag. What respect it brought from the passers by!

Three officers were standing talking on the pavement—one a major. One saw the flag-covered coffin and called the attention of the others. Did they look on casually? No! All three walked to the edge of the pavement, drew themselves up as though on parade and stood to the salute, hand to cap for at least twenty seconds. Had they been saluting their King, greater respect could not have been shown. Poor Woodland could not know of this respect from his high officers, his own people in their grief probably failed to notice, but I noticed, and I felt, and I understood: IT WAS THE RECEIPT FOR PAYING THE PRICE OF EMPIRE, and more, IT WAS THE RESPECT OFFERED by the high to the lowly in that glorious body of men, Britain's pride, who are day in and day out giving their lives for their Country.

Let us see to it in the future, when the necessity for these sacrifices is no more, that those who are gone are not also forgotten.

THE RANGE OF FLIGHT AND RADIUS OF ACTION OF AIRCRAFT.

THE EFFECT OF OBLIQUE WINDS ON THE SPEED AND RANGE OF FLIGHT.

In our issue of May 18th, we examined the effect on the speed and radius of action of an aeroplane of a wind blowing in a direction parallel to the line of flight. This condition, however, seldom obtains in actual practice for more than a brief period; and generally, the direction of the wind is oblique to the course of the machine. Under these circumstances, the course of an aeroplane relative to the ground will depend upon the velocity and direction of the wind and the speed and direction of the machine relative to the air through which it is travelling; and the pilot will turn the nose of the machine into the wind through some angle, the magnitude of which will depend upon the factors mentioned, to compensate for the effect of the wind. This angle will become less as the air speed of the aeroplane increases and as the velocity of the wind decreases, and the more the direction of the wind tends to coincide with the line of flight.

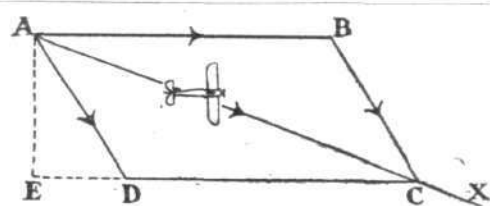


Fig. 1.

Ordinarily, before commencing a long-distance flight, a pilot determines his course from the map, and notes the position of some distant recognisable object or objects over which he must pass in travelling towards his destination. He sets the course pointer in the correct position, and, on getting into the air, places the machine on the course previously determined. The effect of a side wind, however, is to blow him off his course, and he therefore turns the aeroplane into the wind, disregarding the compass entirely until he finds himself heading straight for the distant object which he located on the ground. He then notes the number of degrees through which he has turned the machine—that is, the angle between the lubber point and the course pointer. On passing over the object upon the ground, he momentarily places the aeroplane on the magnetic course and picks up another landmark directly ahead; and then immediately turns the machine into the wind through the angle he found necessary before reaching the first object, and finds whether or not the aeroplane is heading for the second objective. It is probable that, should the wind be constant in velocity and direction, a small reduction in the number of degrees can be made; but by taking a succession of observations of this character on a series of distant points, a mean value is obtained, which, if the machine is turned off its magnetic course by this amount, will bring the aeroplane over its desired destination.

When flying at night, in a strange country or in a haze or fog, or over the sea, however, the location of definite objects on the ground is at times impossible; but given the true course, so long as the velocity and direction of the wind and the air speed of the aeroplane are known, it is possible to ascertain not only the angle between the true course and the axis of the machine, which is all that is necessary in order to fly towards the desired destination, but also the ground speed at which the flight is made, and therefore the time at which the aeroplane should reach the end of its outward journey. The air

speed of the aeroplane will be known before starting the flight, and can be checked by means of the air-speed indicator on the journey; while the direction and velocity of the wind can be approximately determined by observing the movements of clouds or other floating objects, if visible, at the height at which the flight is made, or by experience, or by flying up and down the wind. The closer the approximation to the true value, the more accurately can the allowance to be made for the effect of the wind be calculated and the nearer will the calculated ground speed be to the true speed; but it will be seen from Fig. 3 that an error of 10 per cent. in the estimated velocity and of 10° in the direction of the wind only produces a cumulative error of $2\frac{1}{2}^\circ$ in the calculated allowance for turning into the wind, and of 5 per cent. in the ground speed, for a wind velocity of 40 miles per hour at an angle of 90° from the true course, and an aeroplane speed of 100 miles per hour; and if any check can be imposed during flight, these values will be reduced accordingly. An error of $2\frac{1}{2}^\circ$ in the course would take the pilot only about 4 miles to the right or to the left of his objective at the end of a 100-mile flight.

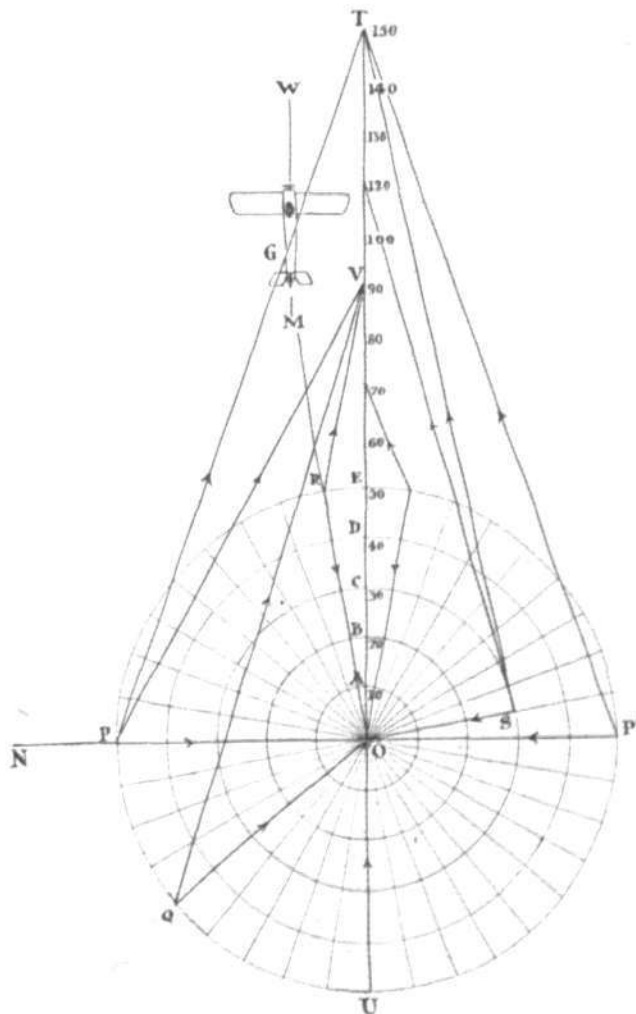


Fig. 2.

Fig. 1 shows diagram, by means of which the direction and ground speed of an aeroplane of known air speed may be determined graphically for a given velocity and

direction of the wind. $AB = CD$ = the air speed of the aeroplane, to some known scale—a scale of ten miles to the inch is convenient and sufficiently accurate to work from. $AD = BC$ = the velocity of the wind to the same scale as AB represents the velocity of wind. AB and BC show the relative directions of the axis of the aeroplane and of the wind. AC is, therefore, the path of the aeroplane over the ground, and to the same scale as AB represents the air speed of the machine; AC represents the ground speed of the aeroplane; since AC is the resultant of AB and BC . The effect of the steady wind of a velocity and direction AD is to cause a side drift of magnitude AE and to increase the forward speed of the aeroplane by ED .

Therefore, if the angle between the wind and the true course of the machine is the angle BCX , that is, if a

pilot wishes to fly from A in the direction AC with a wind blowing in the direction parallel to BC , with the other data given above, the angle through which the pilot turns the aeroplane into the wind is the angle BAX , and its ground speed will be represented in magnitude and direction by AC . Hence by repeating the construction for different values of AD , AB and the angle BCX , we shall obtain the ground speeds AC and angles BAX corresponding to them. To facilitate working, the diagram shown in Fig. 2 is given, where it is assumed that the axis of the aeroplane is kept in a constant direction and parallel to UT , the wind changing its direction relative thereto along the radii of the circles concentric with O . Thus with an air speed of 90 miles per hour and a wind velocity of 50 miles per hour, if the direction of the wind is (α) along RO as shown by the

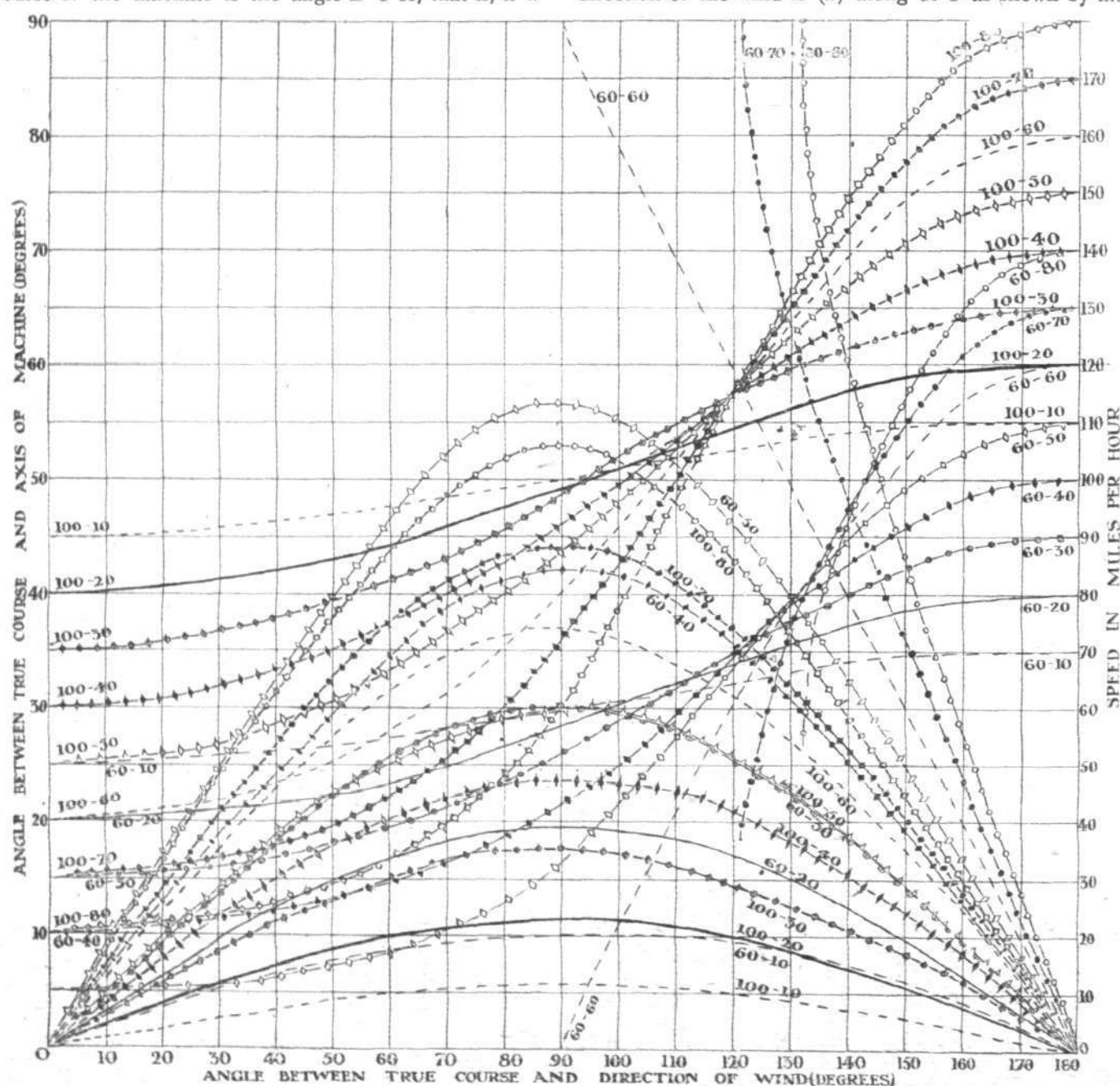


Fig. 8.—Diagram showing the effect of wind velocity and direction upon the ground speed and course of an aeroplane flying at air speeds of 60 and 100 miles per hour. In indexing the curves, the velocity of the machine is given first in each case. Thus, a curve numbered 100-30 refers to an aeroplane having an air speed of 100 miles per hour flying in a wind of 30 miles per hour. The curves passing from one side of the diagram to the other are speed curves, whilst those which pass from one end of the base line to the other, or to the top line of the diagram, refer to the angle through which the machine is turned into the wind.

arrow head, or (b) along PO , the angle between the wind and the true course is (a) MRV and (b) NPV , and the pilot will turn the machine through the angle of (a) RVQ and (b) PVQ to compensate for the side drift, while the corresponding ground speeds will be (a) RV and (b) PV .

It will be seen that by measuring the angle between the true course and direction of the wind to the right or to the left of the direction in which the flight is made, it is only necessary to consider values of such angles for 0° to 180° , and the aeroplane will turn through the determined angles—for example, WGT for the conditions represented by the triangle TPO —to the side of the course on which the wind is blowing. This is seen from an inspection of Fig. 2, since the triangle TPO is identical in every respect with the triangle $TP'O$.

The results obtained from the graphical construction indicated have been plotted in Fig. 3 for air speeds of 60 and 100 miles per hour, and for wind speeds of from 0 to 80 miles per hour; and intermediate air and wind speeds can be approximated to with sufficient accuracy. It will be observed that an aeroplane may fly across country in a wind greater than the air speed of the machine provided that the magnitude of the angle between the wind and the course is not less than a certain value. Thus, if wind velocity is 70 miles per hour and the machine speed is 60 miles per hour, the direction of the wind must make an angle of not less than 121° with the true course in order to reach the desired destination, and the speed along that course will be 36.8 miles per hour. Generally, the limiting angle of the wind is reached when the component of the wind velocity parallel to the axis of the aeroplane is equal to the velocity of the machine.

To make use of the diagram, first ascertain the approxi-

mate value of the wind velocity and the angle which the wind direction makes with the true course; then erect a perpendicular to the abscissae for that angle, until it intersects the curve of angles and velocities given, or the interpolated curves for speeds other than those shown on the diagram, and read off the angle and speed on the vertical scales. In order to simplify the reading of the diagram, separate diagrams may be constructed for each aeroplane speed.

If during flight, the wind changes its direction or velocity, as may be seen by observing (by means of the devices incorporated in one of the Clift and in the Gross anti-drift compasses) whether or not there is any drift on the machine, if one of these factors is known, the other may be determined by noting the change in the angle through which the machine must be turned to compensate for the change in the wind.

For estimating the range or duration of flight, assuming a constant wind, if the direction of the wind is such as to make an angle θ with the true course on the outward flight, on the homeward journey the angle will be $(180 - \theta)$; and the ground speeds of the aeroplane on these conditions. Let these speeds be x and y . Then x = the nominal air speed (V_n) of the machine along the true course plus the nominal wind velocity (W_n) in the same direction, while y = the difference of these speeds.

$$\therefore x = V_n + W_n \quad \text{and} \quad y = V_n - W_n$$

$$\text{and } V_n = \frac{x + y}{2} \quad \text{and } W_n = \frac{x - y}{2}$$

Hence the radius of action will be equivalent to that of a machine of speed V_n flying in a wind of velocity W_n parallel to the axis of the machine, and by reference to the diagram given last week, we can find the limit of the radius of action.

Metal Spraying and Aircraft.

IN a paper read recently before the American Society of Automobile Engineers, Mr. Lathrop Collins gave some details of the Schoop process of spraying metals, and instanced several possible applications to aircraft. He said:—

"In the case of aeroplane propellers which cannot be made of metals by reason of their density and great peripheral speed, wood, which is less dense and very resistant, is employed, and polished and varnished to diminish the air resistance. Varnish soon wears off and the wood becomes rough. Very thin Schoop coatings, particularly of aluminium, take a high polish, are firmly adherent, especially if plated on a roughened surface, and are ideal for protecting the wood blades. Wings of aeroplanes also can be coated, as well as balloon bags for dirigibles. One company has endeavoured to prevent injury to the rubberised cloth due to the weather, impurities in the hydro-

gen and, above all, to ultra-violet rays, by covering it with aluminium. Schoop deposits in this case are very adherent and satisfactory, and contain no grease."

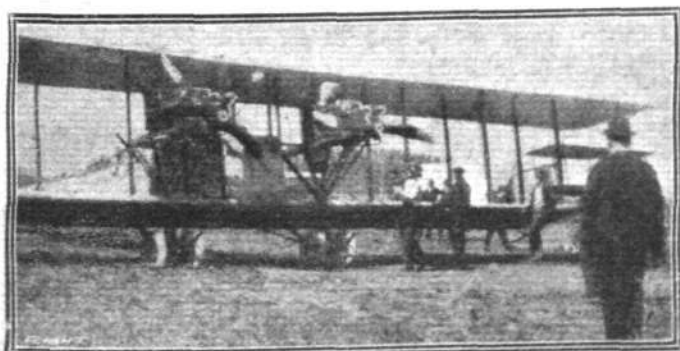
In the Schoop system the spraying is effected by a compact little device known as a "pistol," at the muzzle of which jets of oxygen and hydrogen stream out at a high speed and are ignited on emergence, so forming an oxy-hydrogen blow pipe, which melts a portion of projecting metal (in the form of wire) and at the same time pulverises it and throws the particles forward under pressure. This molecular spray is said to enter the pores of any surface against which it is directed, obtaining sufficient interpenetration to secure thorough adherence, and rapidly builds up. The metals employed at present are lead, brass, zinc, tin, aluminium, gold, copper, bronze, silver, and alloys. The cold wire is pulled from a reel into one end of the pistol, continuously and uniformly, at a rate of speed dependent upon the melting point of the selected metal, and which varies from 12 to 35 feet per minute, while at the mouth of the short nozzle, at the opposite end, there issues a continuous hot blast that carries entrained in it, with a velocity of about 3,000 feet a second, a very fine spray of molten metal.

For Thrust Washers and Ball Bearing Repairs.

APART from holding a very large stock of ball bearings for every purpose Messrs. Laurence Norris and Co., of Imperial Buildings, Kingsway, W.C., are making a speciality of supplying thrust washers in sizes, not only for aircraft but for motor work, which are difficult to obtain at the present time. It may also be recalled that the firm have a department which is entirely devoted to repairing all kinds of ball bearings.

The Midland Flying School.

HAVING now completed arrangements for taking over the Midland School of Flying, the Horace Wright Aviation Co. announce that operations will soon be in full swing again at the Billesley Aerodrome, King's Heath, Birmingham. Advantage has been taken of the time occupied in negotiations, &c., to secure additional equipment, hangars, &c. One useful item is a clear span portable hangar capable of holding ten machines, and it is hoped that its capacity will be fully tested before long.



A closer view of the two engines of the new American "battleplane." Each of these is of 120 h.p. The mounting, it will be noticed, is of a somewhat unusual form, and does not look any too strong, while apparently offering a fair amount of resistance. (From the "Scientific American.")

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

General Headquarters, June 6th.

"Yesterday, owing mainly to the inclement weather there is nothing to report about operations in the air."

General Headquarters, June 9th.

"Yesterday in the air, under better weather conditions, a large amount of successful work was carried out. A considerable number of hostile aircraft was seen, but there are no combats to report, and our machines carried out their duties with practically no interference."

General Headquarters, June 10th.

"The enemy sprang two mines south of the Virestraat-Wytschaete road, causing slight damage to our trenches, but damaging their own trenches also. Following these explosions hostile aeroplanes dropped bombs effectively on to our trenches."

General Headquarters, June 11th.

"Rain and thunder storms interfered with air work during the greater part of yesterday. During the fine intervals some successful artillery work was accomplished and six combats took place. A Fokker was driven down, and crashed in a field near Habourdin."

War Office, June 12th.

"*Egypt.*—The General Officer Commanding-in-Chief in Egypt reports that hostile aeroplanes attacked Kantara (on the Suez Canal) with bombs and Romani (east-north-east of Kantara) with machine gun fire on Sunday, but were driven off by our aircraft."

"A few minor casualties were caused at Kantara, but none at Romani."

Russian.

Petrograd, June 9th.

"Near Buriatino, S.E. of Luck . . . In one of the sectors among other booty we captured thirty balloons and tanks of asphyxiating gas."

"In the neighbourhood of Molodetchno station an enemy aeroplane dropped four bombs."

"Five German aeroplanes carried out a raid on the small town of Logichine, north of Pinsk, dropping about fifty bombs. One machine was brought down by our artillery fire, and fell in the German lines."

Italian.

Rome, June 10th.

"Enemy aeroplanes dropped bombs at various parts in the Venetian plain. The total result of the raids was seven wounded and some material damage. One of our squadrons of Caproni

aeroplanes bombarded enemy camps and works at Dazzees and in the Assa and Astico Valleys. All the aeroplanes returned safely."

Rome, June 11th.

"Enemy aeroplanes dropped bombs on Fonza (about seven miles west of Feltre) without causing any casualties or material damage."

Rome, June 12th.

"Enemy aviators threw bombs on Vicenza, hitting the military hospital, and also on Thiene, Venice and Mestre, doing some slight damage."

German.

Berlin, June 9th.

"This afternoon a French battle hydroplane was shot down by one of our seaplanes. The occupants were picked up and taken into harbour by one of our submarines which was in the neighbourhood."

Austrian.

Vienna, June 9th.

"Our naval aviators dropped a number of bombs on the railway establishments at Portogruaro, Latisana, Pallazuolo, the inner fort of Grado, and an enemy naval aeroplane station. Our land aviators dropped bombs on the railway stations at Schio (south of Arsiero) and Piovere (Garda)."

Vienna, June 11th.

"Our aviators dropped bombs on the station of Cividale (east of Udine)."

Vienna, June 12th.

"A squadron of seaplanes freely bombarded during last night the railway line between San Dona and Mestre (on the line from the Isonzo front to Padua) and the railway establishments at Mestre (near Venice), with good results. Several direct hits were observed in the depot for locomotives, and a few bombs were also dropped on the arsenal in Venice. Notwithstanding the fierce fire of the enemy all the aeroplanes returned safely."

Turkish.

Constantinople, June 8th.

"One of our seaplanes attacked an enemy aeroplane which flew over Sedd-el-Bahr and chased it towards Imbros. We drove off another enemy aeroplane by the fire of our artillery and destroyed an enemy camp on the island of Makronisi, causing great confusion by our artillery fire."

Constantinople, June 9th.

"On the front near Aden two enemy aeroplanes were damaged and shot down by our fire."

"In the Straits sector we drove off two enemy aeroplanes which flew over Sedd-el-Bahr and Kumkale."

From Other Sources.

In an account from Mr. H. Warner Allen, Special Representative of the British Press with the French Armies, on the heroic struggle for Fort Douaumont on May 22nd and 23rd last, says:—

"A little before six o'clock on the morning of May 22nd an aeroplane squadron of the Army of Verdun went up and passed over the enemy's lines. A few minutes later six German sausage balloons which were flying captive above the right bank of the Meuse exploded. The French airmen had accomplished their mission; they had deprived the German artillery of its best means of observation and hampered its action very considerably for a portion of the day."

"A soldier amazed to see that the enemy's shells were falling well outside the zone which was usually swept so methodically by them, remarked to his officer: 'Mon Colonel, we have put a bandage on the Germans' eyes. It is as though we were playing blindman's buff them. They are firing as if they were drunk.'"

An Exchange message from Paris on June 7th says:—

"The German airman Kandulski, who killed the famous French airman Pégoud in an air duel, has himself been defeated and killed in an aerial fight which took place a few days ago near Mulhouse. The French pilot who brought him down is one of the youngest."

News was received in Amsterdam on June 7th from Maestricht to the effect that an Allied air squadron bombarded the wharves of Hoboken, near Antwerp, where the Germans are building destroyers. The bombardment had satisfactory results. The machines all escaped the German fire.

Mr. G. J. Stevens, writing from Salonica to the *Daily Telegraph* on June 7th, says:—

"French airmen carried out a raid in the direction of Istip to-day. They dropped bombs on enemy encampments en route and returned safely."

In the Russian *Bourse Gazette*, in the course of an article by Mr. Farbman, who has visited the British front in Flanders, there is the following:—

"British aviators protest against the Press talk about Fokkers, and insist upon the superiority of British aircraft. I had the opportunity of flying on board a new British model much superior to the best German machines."

The *Daily Telegraph's* correspondent at Rome, writing on June 9th, says:—

"An attempt has been made to keep the Austrian troops in the Trentino in ignorance of the disasters on the Eastern front, but Italian aviators have undertaken the duty of informing them by dropping everywhere manifestoes announcing the great Russian victories."

Mr. G. Ward Price, writing to the *Daily Mail* from Salonica on June 8th, says:—

"These last two days French aeroplanes have bombed the Bulgars' positions and working parties on their new line. But while the most advanced post of regular Bulgarians is 200 yards from Demirhissar town, their collaborators, the comitadjis (irregulars), who are drawn from the Bulgarian peasantry, have occupied some districts and are finding a congenial occupation in raiding the Greek villages within reach."

The special correspondent of the *Times* at Sa'onica, writing on June 11th, says:—

"French aircraft to-day bestowed a leisurely, undisturbed attention upon Fort Rupel and the surrounding camps without encountering opposition from a single enemy air machine."

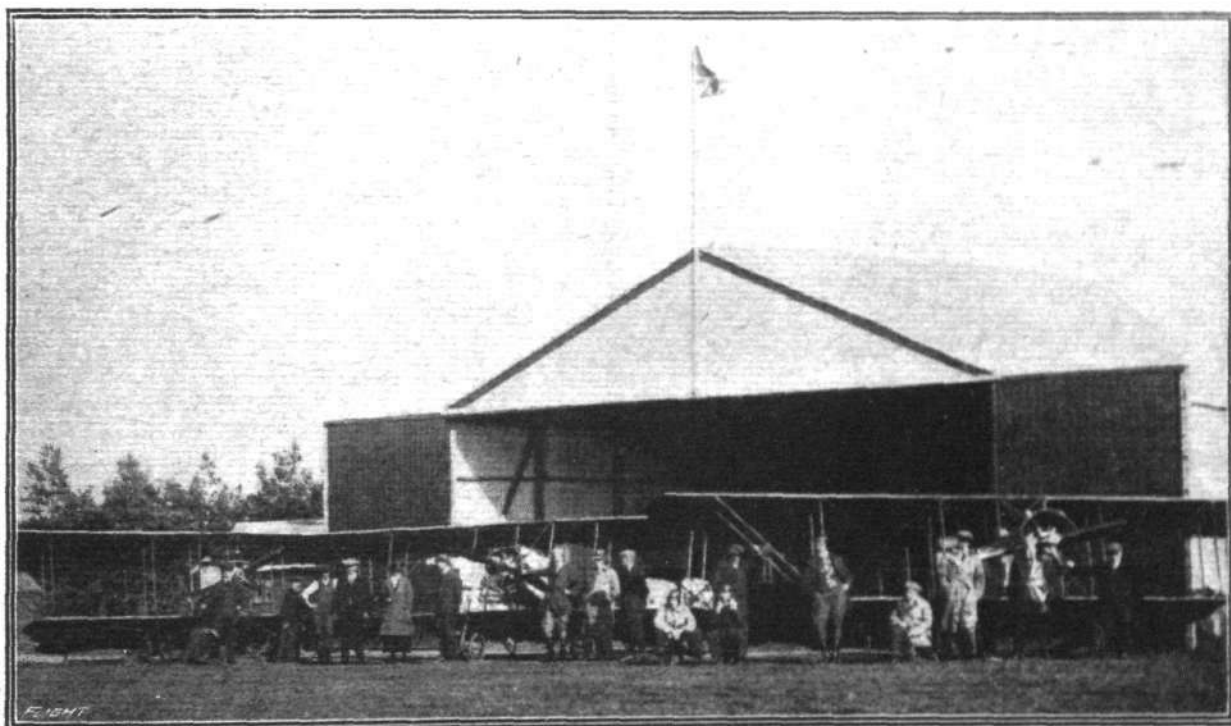
"I hear on good authority that the Bulgarians complain of the failure of the German air service to defend them from the incessant showers of bombs dropped by the French, and bewail the fact, too palpable to be denied, that their inferiority in this branch of warfare is more marked on the Bulgarian frontier than on any other front."

"The town of Xanthi (about 10 miles beyond the eastern Greek frontier) is stated to have been completely abandoned by the inhabitants owing to the successful air raids of the French."

THE BOURNEMOUTH AERODROME.

"Be sure and pay me a visit at the aerodrome when you are down at Bournemouth next time." Thus spoke Mr. F. E. Etches, of the Bournemouth Aviation Co., a week or two back when I ran against him in town. And so it happened a few days ago I was able to take him at his word with very pleasurable results. Talbot Village, where the 'drome is situated some two miles inland, entails no difficulties in getting there. "Just get on to the Winton tram," said the first person I asked to direct me, "and that will drop you at the Avenue, within ten minutes' walk of the 'drome." And if the aerodrome were not sufficient attraction itself—which it is—the glorious avenue of pines, which leads up to Mr. Etches' haven for embryo flyers, would more than repay the journey out to see it. Then came the aerodrome itself, a fine expanse of smooth level turf of some 60 acres, which the company have turned to real good purpose. Altogether it is an excellent flying ground, not only on account of its surface, but by reason of its being situated on the highest bit of ground in the neighbourhood—about 100 ft. above sea level—it is entirely free from those disturbing atmospheric conditions so much in evidence in an aerodrome surrounded by hills. This is a great advantage, for weather conditions have little chance to play tricks with you,

summer months pupils may, should school work be off, get a chance of sampling that great feature attaching to Bournemouth—perfection of bathing. It will be seen, therefore, that as regards the general features of the aerodrome, things are pretty well ideal; and now for those other important items, *personnel* and *matériel* of the school. Mr. F. E. Etches, the "Headmaster," has had considerable experience in flying matters, especially as regards organization, having been manager to the late Gustave Hamel during the latter's exhibition tours. He also acted in the same capacity for F. W. Goodden until the outbreak of hostilities. The chief instructor is S. Summerfield, who obtained his certificate at the Bristol School at Brooklands in September, 1912, and who has done much flying of a varied nature—exhibition work, instruction and the testing of experimental machines. The first task that fell to his lot on joining the Bournemouth Aviation Co. was the by no means easy one of initiating the staff into the mysteries of the construction and repair of aircraft, with what success may be gathered from the fact that a complete two-seater dual-control machine has already been built "on the premises." This machine is of the same type as those at present in use, viz., Anzani-engined L. and P. Caudron-type biplanes of 35, 45, and



THE BOURNEMOUTH FLYING SCHOOL.—The machines, some of the pupils and staff.

and there is no reason to worry about up above if things are calm on the ground.

In other words, whatever the weather conditions really are on any particular occasion so it will be at the aerodrome. Pupils, therefore, are practically always in a position to know if it is any good going up to the aerodrome to get in some practice, and thus do not waste time waiting about the aerodrome when the weather is uncertain.

Another good feature is that owing to the gravelly nature of the soil and its high position, no matter how much rain there may be, mud and puddles—those banes of learners—are practically unknown. There is a clear run in all directions well in accordance with existing requirements, but when the time calls for it by the removal of a few hedges no less than a straight of about one mile will be available. Outside the aerodrome boundaries there are several open spaces, which serve as excellent refuges for stray "pups" should they be unable to return to the 'drome. In the all-important question of "diggings" the pupils are very well placed, as there is plenty of accommodation in the pleasantest of surroundings within a few minutes, and moreover at moderate terms.

About half an hour's pleasant walk by way of the Talbot Woods, which adjoin the aerodrome, brings one to the sea, so that in the

60 h.p. respectively, the two higher-powered 'buses having dual control. The workmanship is excellent, and Mr. Summerfield has introduced several modifications that should add to the all-round usefulness of this type for school work. The very wise policy has been adopted of always having a complete stock of spare parts and fittings in hand so that on the arrival of the inevitable "pile up," the machine is out of commission for as short a time as possible.

Up to the present only one hangar has been erected, but others are to be put up in the near future—in conjunction with several interesting schemes which are in contemplation by the go-ahead proprietor. The existing hangar for the moment fills the bill of present requirements, it being very large, and exceptionally well built—as the recent never-to-be-forgotten gale found to its disgust. The large sliding doors are about the easiest in operation I have come across, in fact the whole hangar is a credit to the B.A.C. and the local builder who was responsible for its erection. As readers of "FLIGHT" may have noticed from the school reports appearing week by week, several "tickets"—and good ones, too—have already been taken and in conclusion it may be of interest to note that the school's official observer is none other than that pioneer of British flying schools, Mr. W. E. McArdle, whose name is not altogether unconnected with flying at Bournemouth in the past.—V.J.

R.N.A.S. Mechanics Wanted.

ERECTORS, constructional fitters, scaffolders, bricklayers, and sheeters are required at once for the Royal Naval Air Service for the duration of the war. They will be rated as air mechanics with

pay up to 4s. a day, in addition to uniform and separation allowances. Applications, with testimonials, either personally or by letter, should be made to the Recruiting Offices, R.N.A.S., Brook-green, Hammersmith, W.

PERSONALS.

UNDER the above heading will be published weekly particulars of a personal character relating to those who have fallen or have been wounded in the country's service, announcements of marriages and other items concerning members of the Flying Services and others well known in the world of aviation. We shall be pleased to receive for publication properly authenticated particulars suitable for this column.

Casualties.

The death is announced at the Persian Gulf of Flight-Lieutenant LEONARD W. HODGES, of the R.N.A.S. Lieutenant Hodges, who was 24 years of age, did his training at Windermere, and obtained his pilot's certificate at Hendon. He was first attached to the Naval Air Station at Calshot, and in December last proceeded to Basra, where he did good work. On April 9th he became commander of the Naval Air Division at the town mentioned, and was holding this appointment at the time of his death. He married a daughter of Mr. and Mrs. W. Hedges, of Camberley, and leaves a widow and one child.

Captain GEORGE ALFRED PRIME JONES, who was killed while flying last month, joined the Buffs in September, 1914, and was gazetted Captain a year later. He had been wounded at the Front by a piece of shell in the side, but was able to return to the trenches after about a fortnight at the base hospital. He was the second son of Captain W. C. Prime Jones, late C.M.R., Cape Colony, grandson of the late Captain R. W. Jones, of Park Place, Sevenoaks, and great-grandson of Captain Richard Jones, R.N., of Homewood, Tenterden, Kent. The funeral took place at Southborough, Kent, with full military honours.

Flight Sub-Lieutenant CECIL ROY TERRANEAU, R.N., who was reported missing, and whose death is now announced, was the third son of Mr. and Mrs. Ernest Terraneau, of The Whare, Twickenham. At the outbreak of war he joined the 1st (Reserve) Battalion London Rifle Brigade as a despatch rider. In May, 1915, he was given his commission as Flight Sub-Lieutenant in the Royal Navy, and obtained his pilot's certificate at Upavon, Wilts, in November last. He was immediately ordered for foreign service, and was killed while on an aeroplane reconnaissance.

Flight-Lieutenant TAUNTON ELLIOTT VINEY, D.S.O., R.N., who was reported missing on May 21st, is now stated to have been killed during an air raid on Ostend on that day, at the age of 24. He was the younger son of Mr. Arthur Elliott Viney and Mrs. Viney, of Johannesburg and Bratton, Frinton-on-Sea. He was educated at Grahamstown and at Mill Hill. He returned to South Africa at the beginning of the war and enlisted as a private in Prince Alfred's Guards, but after six months again came to England and took up a commission in the R.N. Armoured Car Section. Soon afterwards he transferred to the R.N.A.S., and gained his pilot's certificate. On November 28th, 1915, it will be remembered—when accompanied by Lieutenant en second de Sinçay as Observer—he

destroyed a German submarine off the Belgian coast by bombs dropped from an aeroplane. For this service he was awarded the D.S.O. on January 1st last, and was promoted Flight-Lieutenant.

Second Lieutenant ERNEST DAVIES LE SAUVAGE, who was accidentally killed on May 30th while flying at the Central Flying School, Upavon, Wilts, was the only son of Mr. and Mrs. Ernest P. Le Sauvage, of Beaumont, Jersey, and was in his 20th year. He was educated at the Victoria College School, Jersey, Hillside, Godalming, and afterwards at Charterhouse. He left Charterhouse a few days before the outbreak of war, and after passing through Sandhurst was gazetted in November as Second Lieutenant in the Dorset Regiment. He went to the Front in December, 1914, and was wounded at Hill 60 on April 22nd, 1915. For his services in France he was mentioned in despatches. After a few months' leave he obtained a transfer to the Royal Flying Corps, and was recently made an instructor at the Central Flying School.

Captain LANCELOT PRICKETT, R.G.A. and R.F.C., who was killed in a flying accident at Netheravon on June 2nd, was the only son of Major and Mrs. Prickett, of Worfield, Worthing, and was 28 years of age. He joined the Royal Artillery in July, 1909, and was gazetted Captain in July last year.

Second Lieutenant GILBERT HAROLD EARLE RIPPON, R.F.C., third son of the late Frederick Rippon, Lincolnshire, was killed on June 9th, aged 29. He was formerly a rubber planter, Lanadrom, Malay Peninsula.

Married and to be Married.

A marriage has been arranged, and will take place at St. James's, Paddington, on Saturday, June 24th, at 10.30, between NEIL KENSINGTON ADAM, Fellow of Trinity College, Cambridge, chemist, R.N.A.S., son of the late Dr. James Adam, of Emmanuel College, Cambridge, and of Mrs. Adam, 21, Barton Road, Cambridge, and WINIFRED, daughter of the late Mr. SAMUEL WRIGHT, of Bradford, Yorks, and stepdaughter of Mrs. WRIGHT, 52, Pembroke Crescent, Hove.

The marriage arranged between Flight-Commander JAMES OGILVY DALGLEISH, R.N., and Miss GUINEVERE KENNEDY will take place at St. Mary's, Ulverston, on June 28th, at 11 o'clock.

Items.

THE KING has sent a gift of wine to the Royal Flying Corps Hospital, 37, Bryanston Square, for the use of the wounded officers under treatment there.

Fatal Accidents.

It is with the greatest regret that we have to record several more fatal accidents. On June 7th, a machine piloted by Lieut. Rippon, after making two sharp turns, side-slipped and nose-dived to the ground from a height of 300 ft. The pilot was found dead in his seat, having broken his neck. A verdict of "Accidental Death" was returned.

According to the *Western Press* there have been two further fatal accidents on Salisbury Plain. In one an officer named Chamberlain fell with his machine about 500 ft. owing to an explosion which blew away the tail, while in the second accident a Canadian officer named Buchanan was the victim.

On June 9th Lieut. Turner, R.F.C., was killed in South Gloucestershire. He was returning from a flight, when the machine fell about 100 ft. to the ground, and the pilot was so seriously injured that he died shortly afterwards.

On June 9th Lieut. F. D. Evans, R.F.C., was flying near Bristol when, apparently owing to engine trouble, the machine dived to the ground, the pilot being instantly killed. At the subsequent inquest a verdict of "Accidental Death" was returned.

NEW COMPANIES REGISTERED.

M. T. Gunsight Co., Ltd., 7, Union Court, Old Broad Street, E.C.—Capital £1,200, in £1 shares. Acquiring a patent to be granted to H. Cahen relating to improvements in the manufacture of anti-aircraft gunsights (provisional protection No. 15,095 of 1915). First directors, Lieut.-Commander H. T. Smith-Dorrien, R.N. (retired) and H. M. Hilbery.

Torbinia Engineering Co. (1916), Ltd., Regent House, Kingsway, W.C.—Capital £35,000, in 15,000 8 per cent. cum. pref. shares of £1 each and 400,000 ordinary shares of 1s. each. Manufacturers of munitions of war, transport motor cars, cabs, &c. Under agreement with the Torbinia Engineering Co., Ltd., and F. L. D. Snell, the liquidator thereof. First directors, Oscar Lewisohn, E. J. Macnamara, W. F. Ladenburg, and L. V. Rothschild.

IMPORTS AND EXPORTS, 1915-1916.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see "FLIGHT" for January 25th, 1912; for 1912 and 1913, see "FLIGHT" for January 17th, 1914; for 1914, see "FLIGHT" for January 15th, 1915; and for 1915, see "FLIGHT" for January 13th, 1916:—

	Imports.		Exports.		Re-Exportation.	
	1915.	1916.	1915.	1916.	1915.	1916.
January ...	20,382	1,509	435	6,399	13,706	—
February ...	380	6,444	138	30,693	18,823	—
March ...	280	3,388	7,218	17,872	5,090	7
April ...	2,189	3,383	23,986	22,608	275	3,783
May ...	178	1,986	12,530	26,165	8,250	300
	23,409	16,710	44,307	103,737	46,144	4,090

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